USER MANUAL

GOLDENEAGLE DVB-T/H

(Software 2.1.x)

Date: 05/2008

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Audemat-Aztec SA – Audemat-Aztec INC
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1. INTRODUCTION

1.1. General information

1.1.1. Regarding Audemat-Aztec

20 years of experience have enabled Audemat-Aztec to offer a complete range of AM, FM, TV and DVB measuring and monitoring devices.
Its product range consists of embedded dynamic measuring, continuity and broadcast quality monitoring (managing complex sensors, communication, centralization and interactivity), RDS and DARC data encoding and re-broadcasting.
AUDEMAT-AZTEC only offers products of high technological added value which integrate functional innovation.

Since 2000, Audemat-Aztec's products have received 11 awards at NAB (the world-wide Broadcast reference show) for the innovation potential of its products.

Audemat-Aztec head office is located in Bordeaux Mérignac (France).
It has a subsidiary in the United States, based in Miami (Florida).

1.1.2. Regarding DVB

DVB is the name for the European project associating more than 180 structures (industrials, broadcasters and regulating bodies) from more than 20 countries in Europe, which has defined standards in digital Satellite (DVB-S), Cable (DVB-C), DVB-H and terrestrial Hertzian (**DVB-T**) broadcasting.

It has also defined an encryption system for controlling access. Other DVB standards have also been defined, such as the DVB-TXT (teletext), DVB-ISC (interactive services) and DVB-MHP (interactivity engine).

The DVB-T was approved by ETSI in February 1997. Like the DVB-S and the DVB-C, information is encoded, according to MPEG2 and MPEG4 (in some cases) standards, DVB defining the transport mode and error protection systems.

The COFDM modulation has been chosen, in 2K (1705 carriers), 4K (3409 carriers) and 8k (6817 carriers) form. Each of these carriers has been modulated in 16/64 QAM or QPSK (see Glossary for definitions).

1.1.3. Regarding GOLDENEAGLE DVB-T/H

GOLDENEAGLE DVB-T/H completes Audemat-Aztec's monitoring range: it is a device for monitoring vital broadcasting parameters for one or several DVB channels.
It is based on the IP2CHOICE software and hardware layout, which gives it developed Remote Control capacities via its modular inputs-outputs, and SCRIPTEASY.

The MPEG analysis part has been done with the partnership of UDCAST who supplies a Dektec driver equiped module capable of counting errors, informing a shared memory area with this data and supplying analysis data for an acquisition period defined by the user.

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There are 3 versions of the product:

1.1.3.1 RF version

Standard:

* **Basic RF:** RF level, Carrier / Noise, MER, BER after Viterbi, PER + Transmission parameters: Cell ID (0-65535), COFDM Mode (2k/4k/8k), Guard interval (1/32 – 1/16 – 1/8 – ¼), Constellation (QPSK 16QAM 64QAM), Code rate (½ 2/3 ¾ 5/6 7/8)

* Streaming, RF scan monitroring, manual and programmed (on alarm and once, or periodic) Audio/video recording, real time measurements, average measurements, data saving….

* MPEG: TS sync lost + sync byte error

* ScriptEasy software

Options:

*** Full RF:** Basic RF + Constellation (real time) + SFN parameters (Channel impulse response – Amplitude, Delay) + DVB-T presence (AGC, Carrier sync alarm, TPS, Viterbi)

*** Second RF input**: cyclical monitoring (identical to the first one): can be used with directive antennas pointing in two different directions).

*** Option:** Digital/relay/analog board

1.1.3.2 ASI version

Standard:

*** Full MPEG**:

1st priority: TS Sync Loss, Sync byte error, PAT (Program Allocation table) error and PMT (Program Map Table) error

2nd Priority: Transport error, CRC error, PCR (Program Clock reference), CAT (Conditional Access Table) error and PTS error

3rd Priority: NIT (Network Information Table), Unreferenced PID, SI repetition error, SDT, EIT (actual, other, PF), RST error, TDT error

MIP monitoring: MIP timing error, MIP structure error, MIP presence error, MIP pointer error, MIP periodicity error

MIP ts rate error

DVB services flow and structure monitoring

* “Service availability”, “Service degradation”, “Service Impairments”

* Stream

ing, recording, real time measurements, average measurements, data saving….

* ScriptEasy software

> **Note:** *a couple of funtionalities are not avalaible in 4k mode: streaming, recording and snapshots.*

Options:

*** DVB-H option:** in-depth analysis of the DVB flow (expert module)

***I/O option:** Digital/relay/analog board

*** Second ASI input:** with the same functioning as the first ASI input. The signal coming from the first ASI input is monitored at the same time as the signal coming from the second input.

*** Switch ASI:** the option is presented in the form of an external box.

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1.1.3.3 RF + ASI version

Standard:

Two running principles:

1/No linked inputs: monitoring is carried out:
Cyclically on the RF input, with
*** Basic RF** in cyclical monitoring on 40 multiplex
* Scanning (manual), real time measurements, average measurements, data saving….

Continuously on ASI input, with:
*** Basic MPEG** module in fixed monitoring
* The same functioning as on the GOLDENEAGLE range, Streaming, real time measurements, average measurements, and data saving….

2/Linked inputs: in this case MPEG signal is coming from the ASI output of the RF demodulator. Monitoring could be done on one multiplex or in several one though the cyclic mode
*** RF Basic** module + **MPEG Basic** module
* The same functioning as on the GOLDENEAGLE range: RF scanning, real time measurements, average measurements, data saving….

Note: *a couple of funtionalities are not avalaible in 4k mode: streaming, recording and snapshots.*

Options:
* **MPEG-Full**

* **RF Full**

* **DVB-H** (expert)

* **I/O option**

* **Second RF input:**

Cyclical monitoring (identical to first): can be used with directive antennae which point in two different directions.

* **Second ASI input:**
Same functioning as with the first ASI input

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1.2. Safety instructions

- To keep AUDEMAT-AZTEC devices safe and to ensure operation exempt from any danger, the user must respect the following instructions, symbols and precautions:

1 - The device should only be operated in the conditions described in this manual.
2 - Nothing must obstruct the ventilation.
3 - The device must only be used with a plug that incorporates a protective ground contact.
4 - To avoid any risk of electrocution, the protection conductor must not be cut, intentionally or not, either on the device or on the power cord.
5 - Before switching on the device, be sure that the nominal voltage specified on the device corresponds to that of the mains' nominal voltage.
6 - To avoid any electromagnetic interference, the device must only be used when it is closed. Shielded cables are mandatory.
7 - The device should only be operated on a stable electrical network. If the electrical network is not stable, a power conditioner, such as a UPS, must be used.
8 - Any operation concerning maintenance, adjusting or repairing must be carried out by qualified staff.

- **Caution: LITHIUM BATTERY**

There is danger of explosion if the battery is not correctly replaced.
Only replace it with a battery of the same type. Please contact us before attempting to use another type of battery.

Do not throw away used batteries; send them back to us.

⇨ To check the IP configuration, connect a screen and a keyboard on the connectors in rear panel and click on "ALT + F3".
⇨ Open the port "8080" to access "streaming functionalities".
⇨ Open the port "8889" to access "real time functionalities".
⇨ Open the port "5570" to access "ScriptEasy ".
⇨ Open the port "21" to access video recording.

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2. PRODUCT PRESENTATION

2.1. List of included accessories

Check that all these accessories are included:

	RF version	ASI version	RF+ASI version
1 power supply cable	x	x	x
1 Ethernet crossed cable (B)	x	x	x
1 Ethernet straight cable (A)	x	x	x
1 2X splitter + 2 BNC/F cables (N)	x		x
1 BNC cable (N)			x
5 BNC Female/F male adapter	x		x
1 IEC(TV)/BNC adapter	x		x
1 3-flap packet including 1 CD-Rom, 1 quality control and 1 customer satisfaction questionnaire	x	x	x
+ 1 BNC/BNC cable			for option RF+ ASI

2.2. General specifications

2.2.1. Product features

Dimensions	2U
Humidity	0 to 95%
Temperature	0° to 45°C,
Power supply	115-230VAC – 50-60 Hz
Modular configuration	up to 5 modules
Port Ethernet RJ45	1
RS-232	1 console port.
USB	2
Digital module	up to 5 x 16 inputs
Analog module	up to 1x 8 inputs
Relay module	up to 5 x 8 outputs

For all information concerning monitoring parameters: see Appendix A.

2.2.2. Boards features

Impedancy	
- RF Input	75 Ω
- ASI Input	75 Ω
RF sensibility	30 dBµV
Dynamic	60 dBµV
C/N: measurement range	0-40 dB
MER: measurement range	20-30 dB

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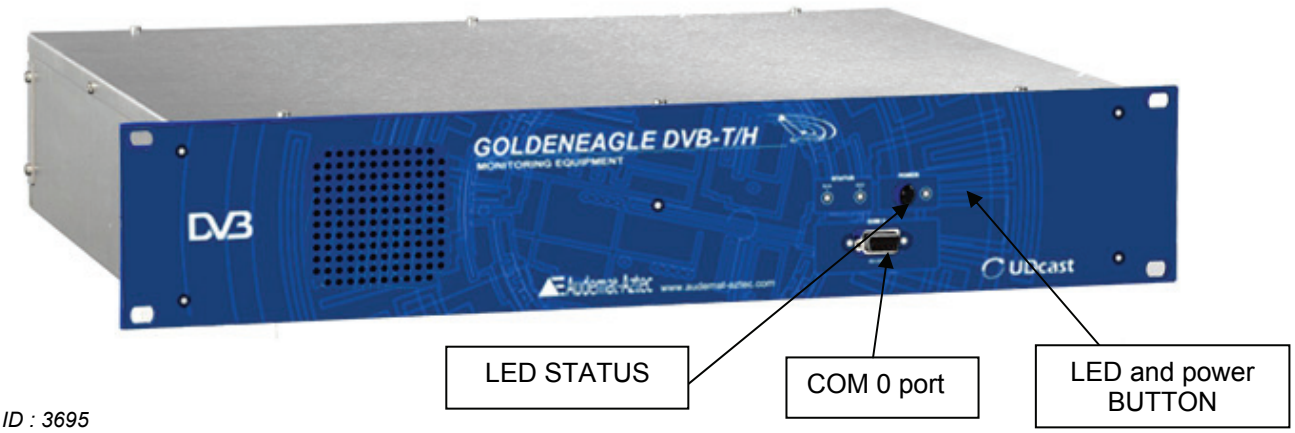
2.3. Front panel



N° ID : 3695
Trade Mark of the DVB Digital Video Broadcasting Project (1991 to 1996)

Explanation of Leds on front panel:

- **LED RUN:**

  On : GOLDENEAGLE DVB-T/H is on
  Off : GOLDENEAGLE DVB-T/H is off

- **LED HDD:** CPU 's activity

- **LED POWER:**

  On : GOLDENEAGLE DVB-T/H is on
  Off : GOLDENEAGLE DVB-T/H is off.

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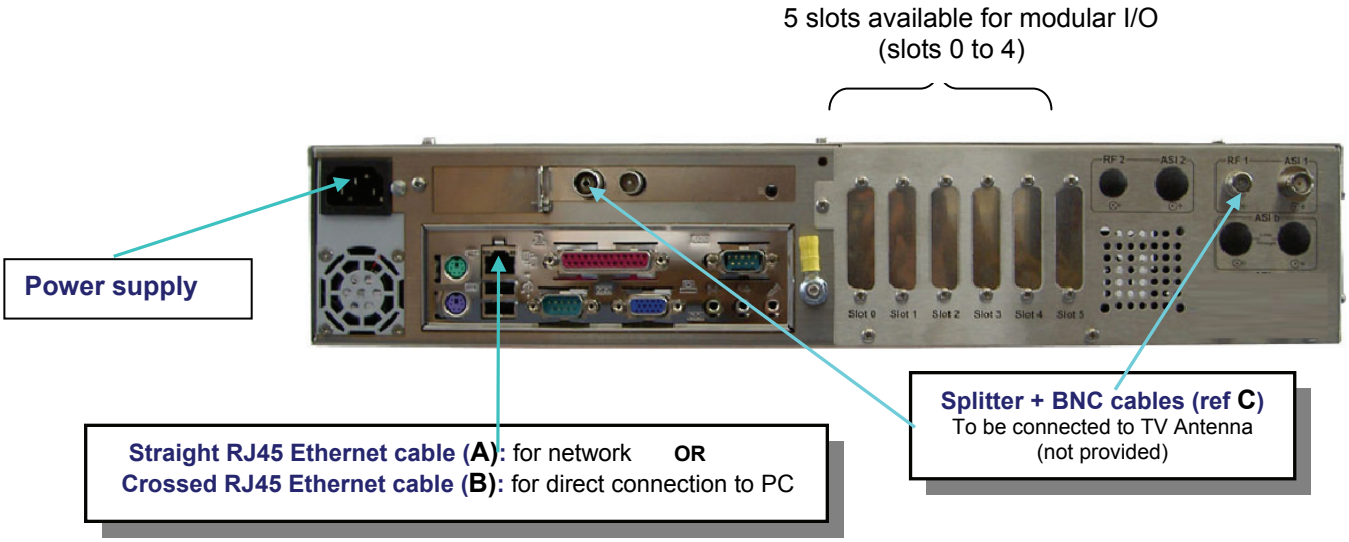
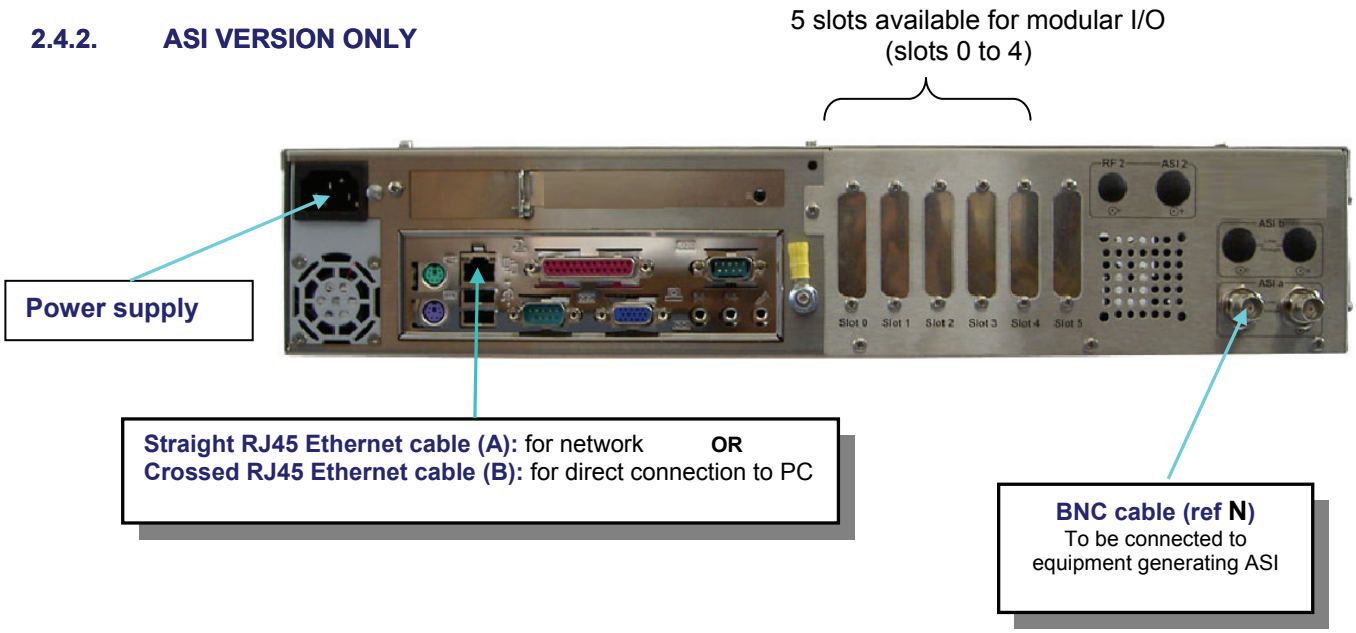
2.4. Rear panel

2.4.1. RF VERSION ONLY


5 slots available for modular I/O
(slots 0 to 4)
Power supply
Straight RJ45 Ethernet cable (A): for network OR
Crossed RJ45 Ethernet cable (B): for direct connection to PC
Splitter + BNC cables (ref C)
To be connected to TV Antenna
(not provided)

2.4.2. ASI VERSION ONLY


5 slots available for modular I/O
(slots 0 to 4)
Power supply
Straight RJ45 Ethernet cable (A): for network OR
Crossed RJ45 Ethernet cable (B): for direct connection to PC
BNC cable (ref N)
To be connected to
equipment generating ASI

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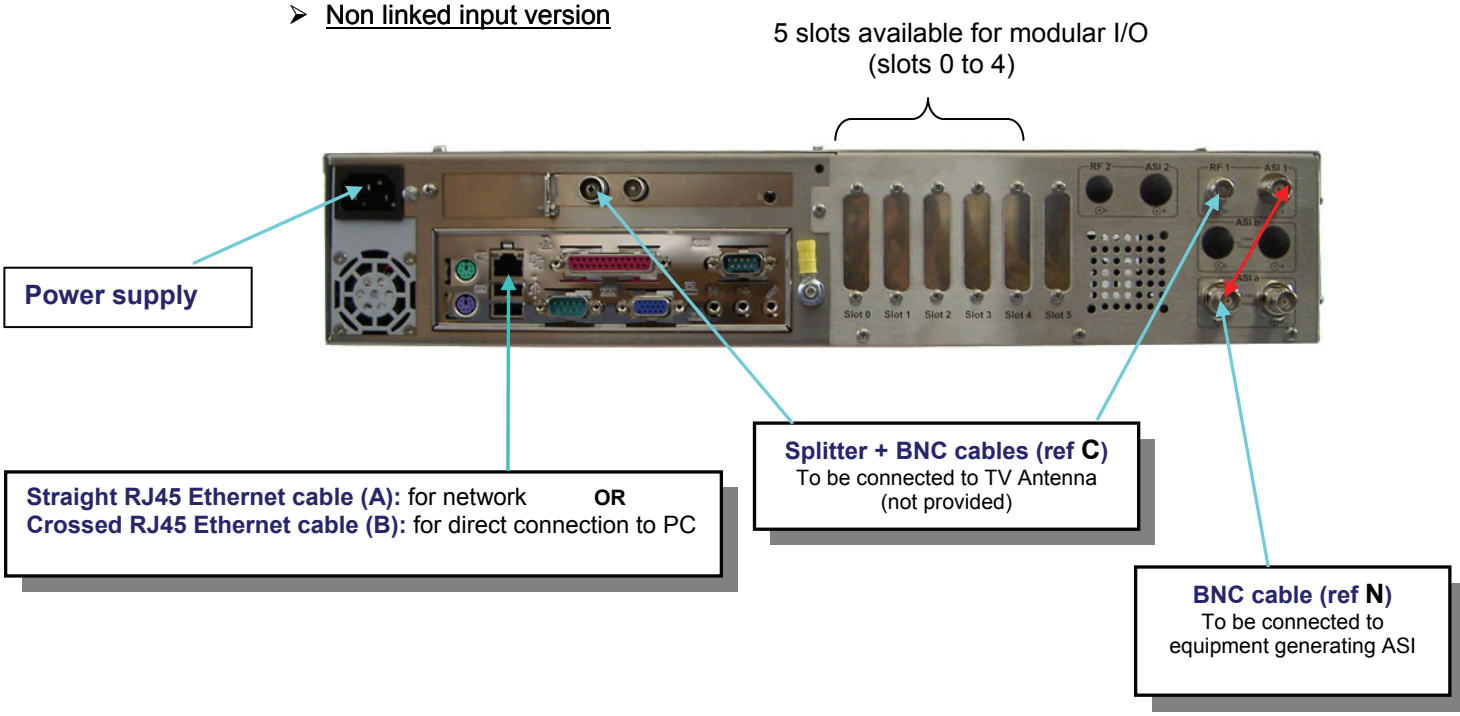
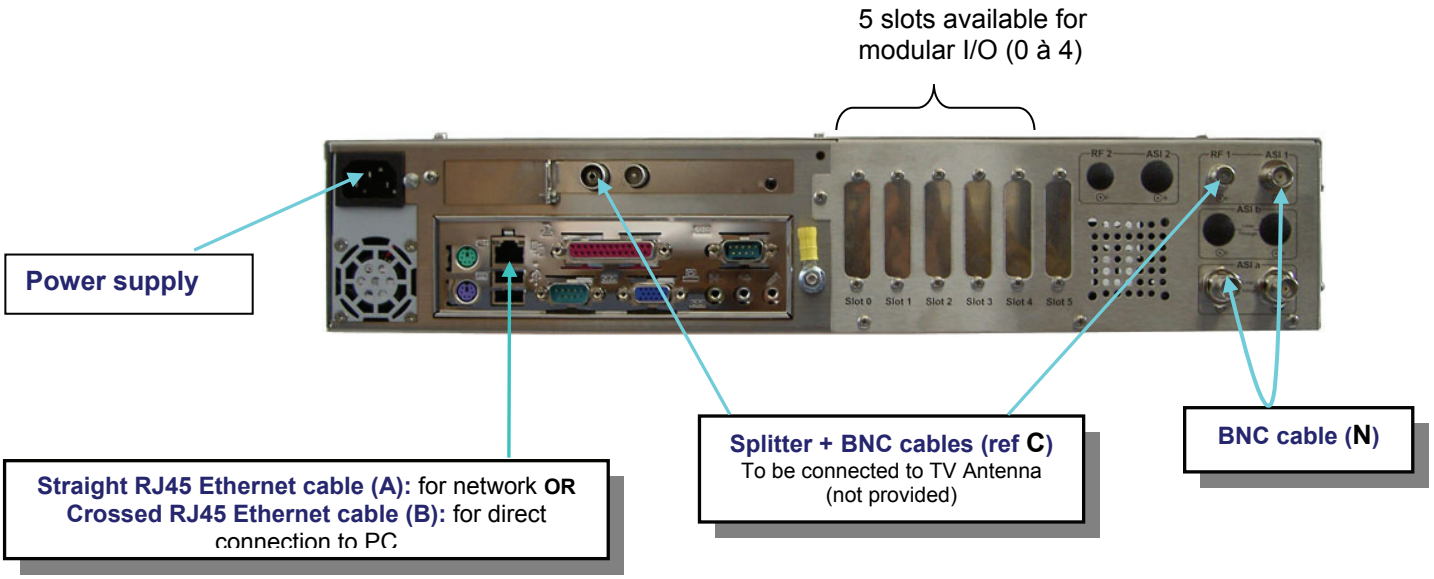
2.4.3. RF/ASI VERSION

➢ Non linked input version


5 slots available for modular I/O
(slots 0 to 4)
Power supply
Straight RJ45 Ethernet cable (A): for network OR
Crossed RJ45 Ethernet cable (B): for direct connection to PC
Splitter + BNC cables (ref C)
To be connected to TV Antenna
(not provided)
BNC cable (ref N)
To be connected to
equipment generating ASI

➢ Linked input version


5 slots available for
modular I/O (0 à 4)
Power supply
Straight RJ45 Ethernet cable (A): for network OR
Crossed RJ45 Ethernet cable (B): for direct
connection to PC
Splitter + BNC cables (ref C)
To be connected to TV Antenna
(not provided)
BNC cable (N)

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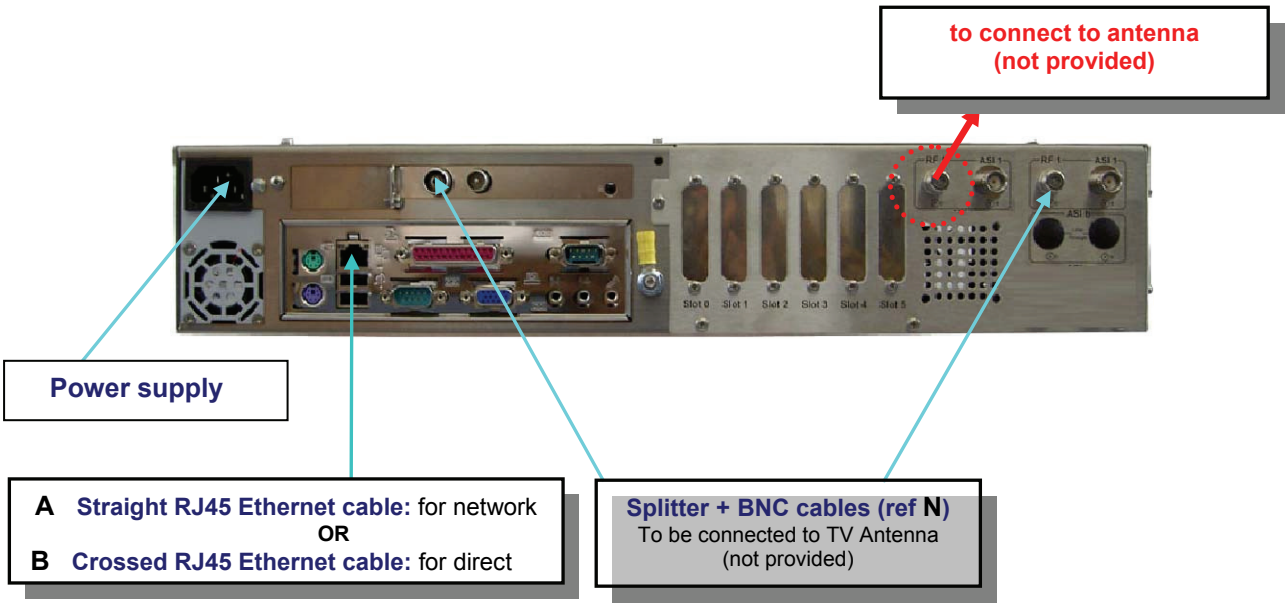
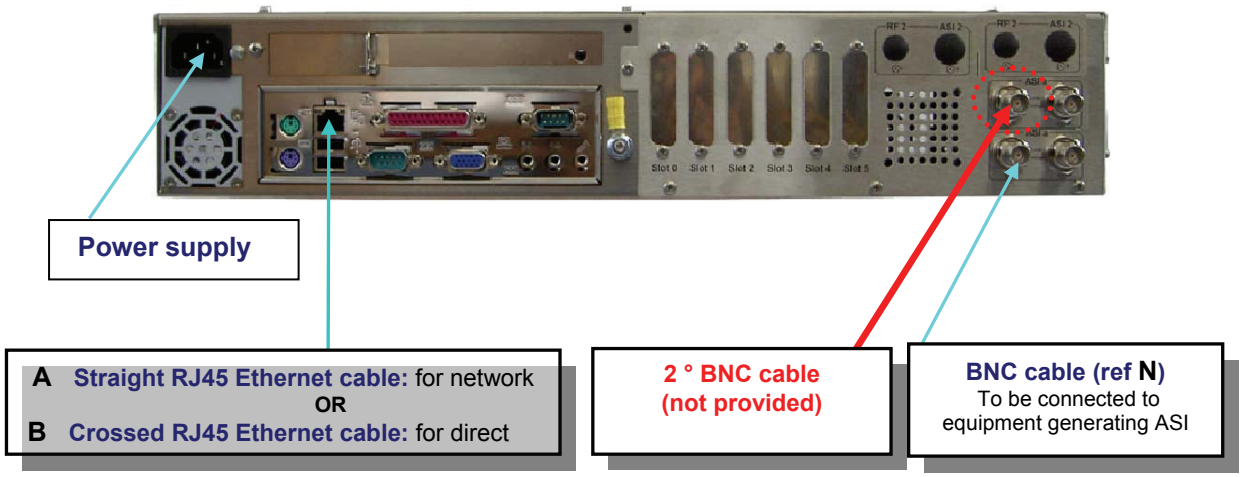
2.4.4. RF ONLY VERSION + 2nd RF Input


to connect to antenna
(not provided)
Power supply
A Straight RJ45 Ethernet cable: for network
OR
B Crossed RJ45 Ethernet cable: for direct
Splitter + BNC cables (ref N)
To be connected to TV Antenna
(not provided)

2.4.5. ASI ONLY VERSION + 2nd ASI Input



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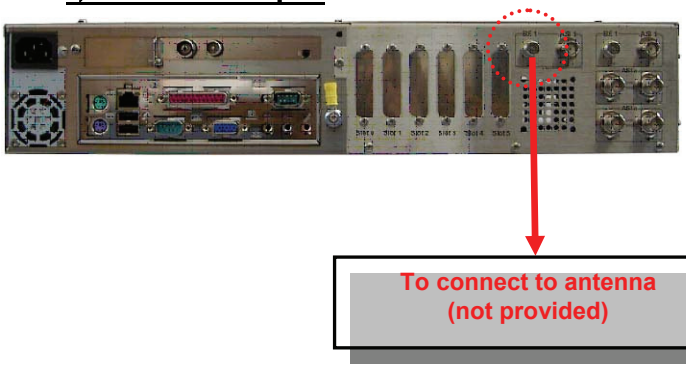
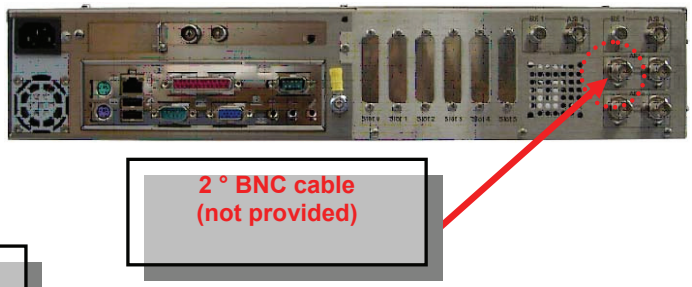
2.4.6. Connections options in RF/ASI mode

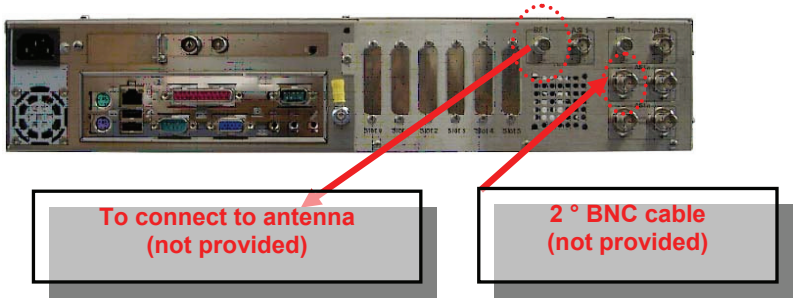
↳ with 2nd RF input



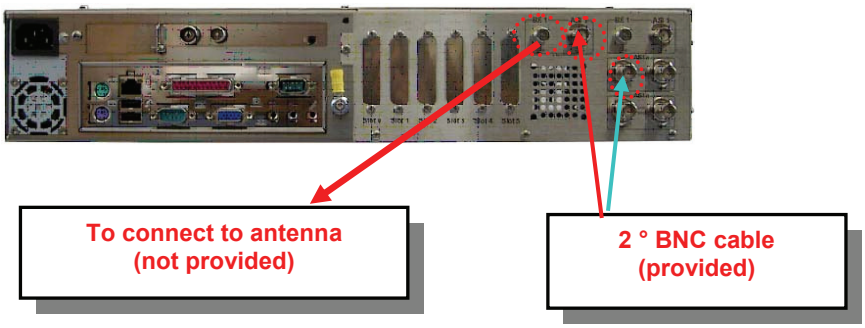
↳ with 2nd ASI input



↳ with the 2nd option "RF+ASI" (non linked inputs)



↳ with the 2nd option "RF+ASI" (linked inputs)



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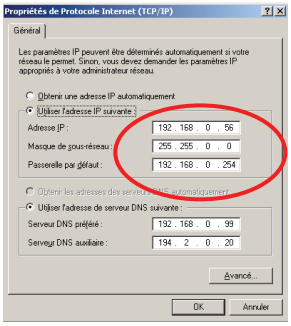
3. QUICK START UP FOR GOLDENEAGLE DVB-T/H

3.1. Connection

Connect the equipment using the power supply cable.

Connect the Ethernet cable (crossover* for a direct connection between the GOLDENEAGLE DVB-T/H and a computer *(* or a straight cable (A) for a connection through a router, switch, or other LAN network device).*

For a direct connection, set your PC IP address in the 192.168.x.y range :


Propriétés de Protocole Internet (TCP/IP)
Général
Les paramètres IP peuvent être déterminés automatiquement si votre réseau le permet. Sinon, vous devez demander les paramètres IP appropriés à votre administrateur réseau.
Obtenir une adresse IP automatiquement
Utiliser l'adresse IP suivante :
Adresse IP :
192 . 168 . 0 . 56
Masque de sous-réseau :
255 . 255 . 0 . 0
Passerelle par défaut :
192 . 168 . 0 . 254
Utiliser l'adresse de serveur DNS suivante :
Serveur DNS préféré :
192 . 168 . 0 . 99
Serveur DNS auxiliaire :
194 . 2 . 0 . 20
Avancé...
OK
Annuler

For this, go to: Configuration panel/Network connection.
Connection to local network/ Properties
Click on Internet Protocol (TCP/IP) from the scrolling menu then on “Properties”.
Add the IP address and the sub-net mask.
(192.168.12.200 for example / Netmask 255.255.0.0).

3.2. Configuration

➢ **From this point on, configuration can be done using the embedded web site of the GoldenEagle via an Ethernet or Internet connection.**

Open a Web browser (Internet Explorer, Mozilla…) and enter the address: 192.168.12.22.
By default:

- Login “Admin“
- Password “admin“

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4. VARIOUS PARAMETERS OF THE EMBEDDED WEB SITE

4.1. Product Id's

- For defining:
  - Product name
  - Product description

- For checking:
  - GOLDENEAGLE DVB's serial number
  - Software version
  - Hardware version

Note: each time the user enters new parameters, he/she must click on "Update".

This remark concerns all GOLDENEAGLE DVB-T/H functionalities.

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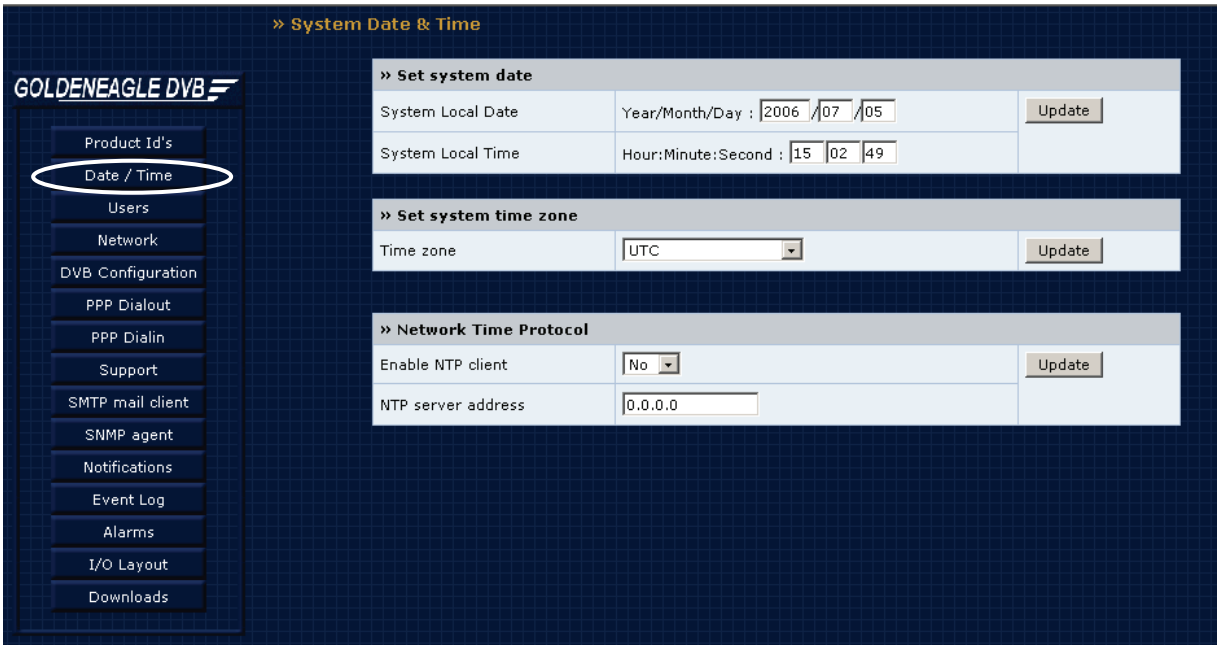
4.2. DATE/ TIME



- Date and time update:
  - The user updates both date (year/month/day) and time (hour/minute/second)

- NTP update (Network Time Protocol)
  - The user can enter an hour server address for automatically updating of the GOLDENEAGLE DVB-T/H.

- Time zone
  - Defines the geographic area

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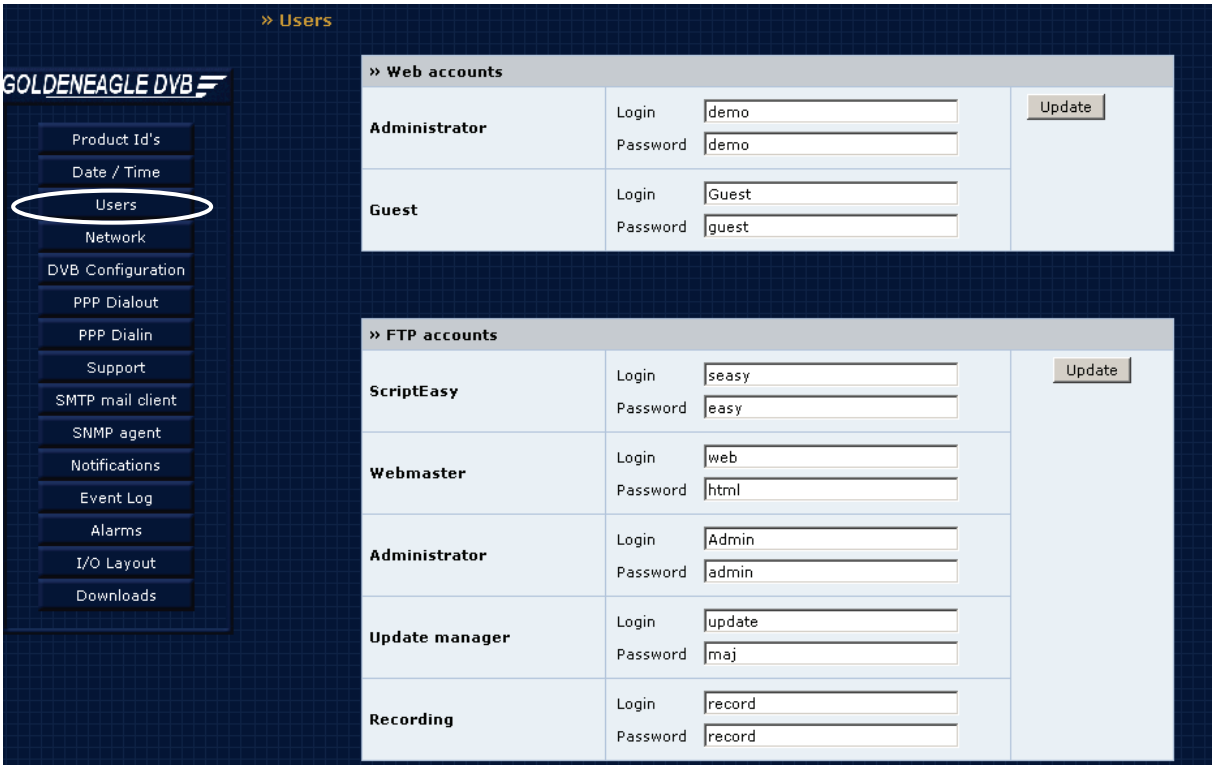
4.3. USERS



- **Web account configuration**:
  - Administrator: for changing GOLDENEAGLE DVB-T/H parameters.
  - Guest: when the user is connected as a guest, he/she can view the parameters but not change them.

- **FTP account configuration:**
  - "Scripteasy" account: access to downloading a script in a device thanks to Scripteasy.
  - "Webmaster" account: non active
  - "Administrator" account: access to entire GOLDENEAGLE DVB-T/H directory.
  - "Update Manager" account: access GOLDENEAGLE DVB-T/H's update directory.
  - "Recording" account: access to the directory where recorded media is stocked.

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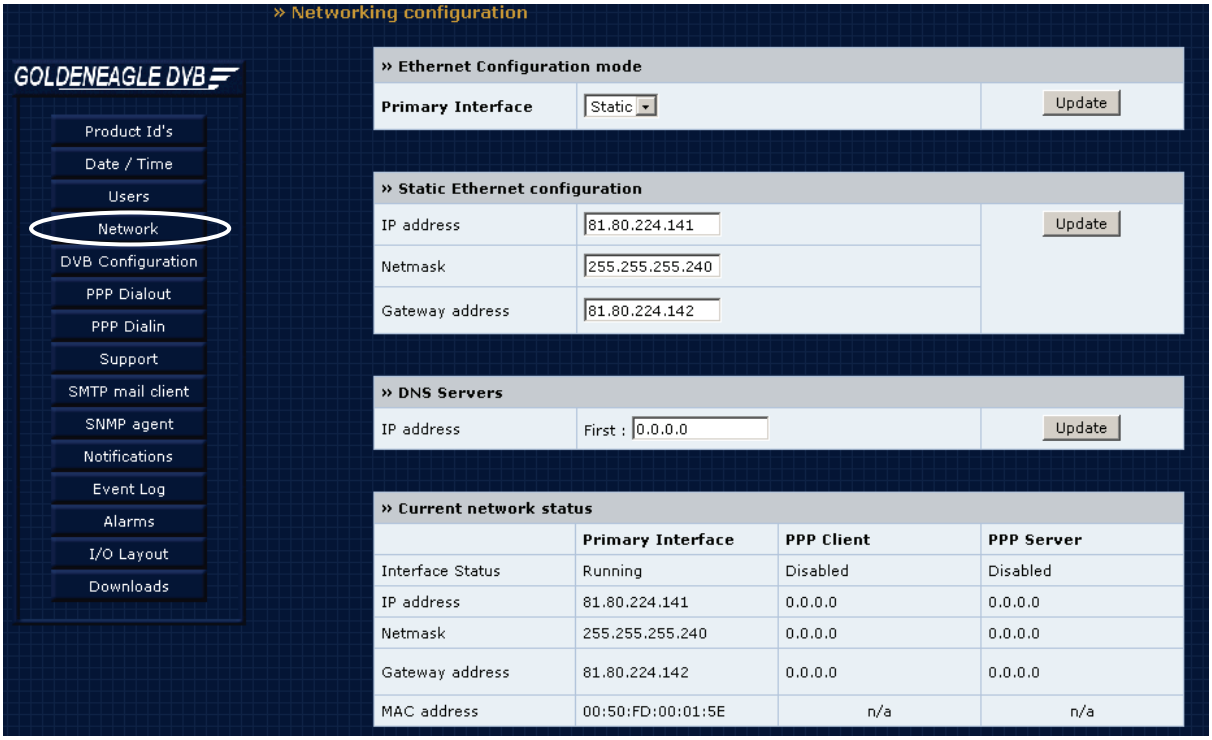
4.4. NETWORK



- **IP configuration definition:**
  - Ethernet configuration mode

    The application can be configured in static or dynamic IP.

  - Static Ethernet configuration

    If the IP address is a static address, enter the parameters in this window.

  - DNS Servers: DNS configuration.

  - Current network status: network's current table.

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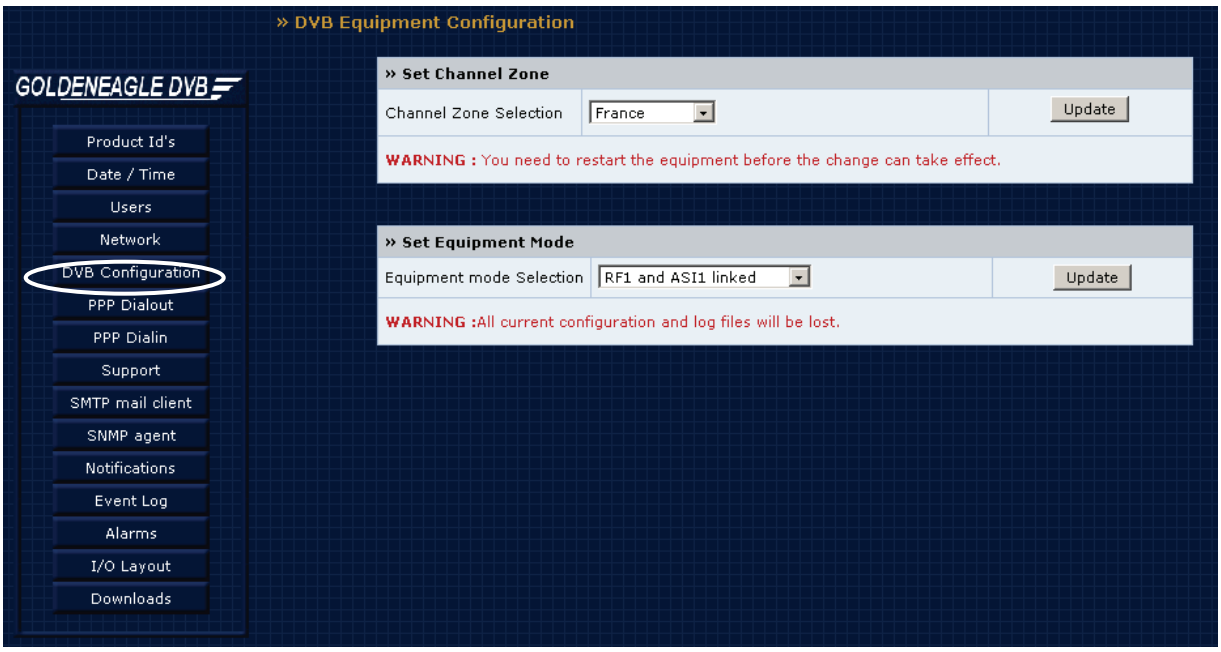
4.5. DVB CONFIGURATION



- **Set Channel mode:**
  - RF Only version: to choose the configuration file, usually associated with a geographical area, which defines the bandwidth according to frequency range and which allows the calculation of the correlation between channel and frequency

- **Set Equipment mode:**
  - RF+ASI version: to choose the linked mode or not linked mode.

NOTE: when the equipment mode is changed (linked or not linked) all previous configuration and log files are lost ; the equipment has to reboot.

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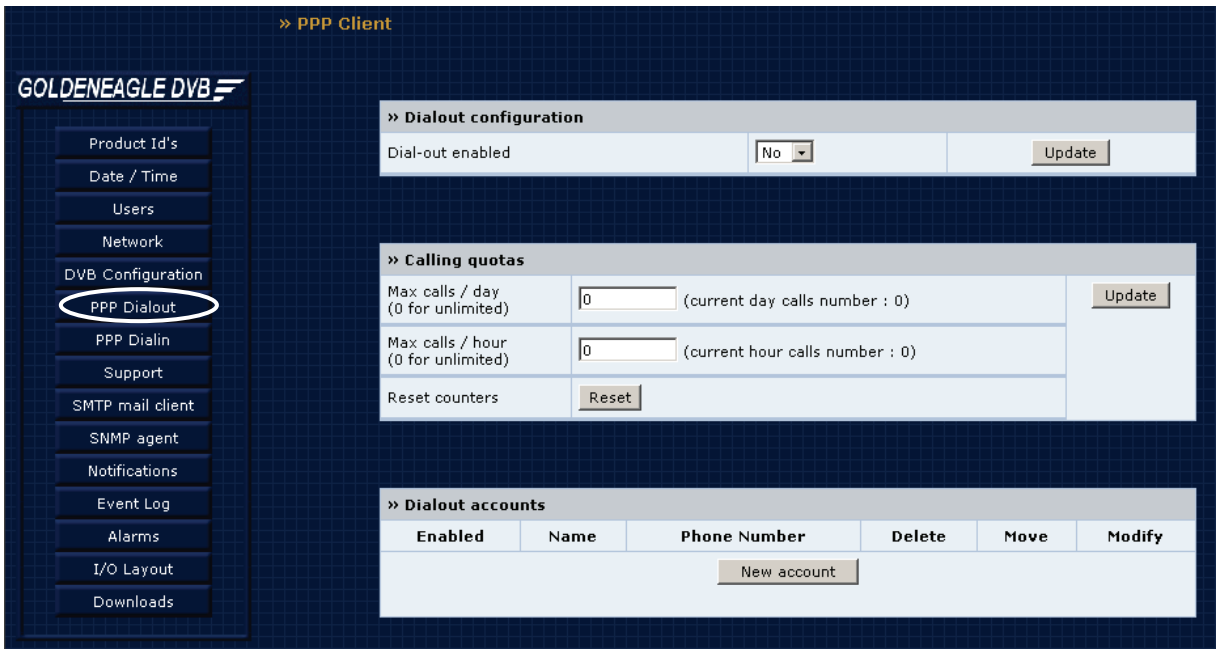
4.6. PPP DIALOUT



➢ **To configure outgoing calls:**

- Dialout configuration: installation of “outgoing calls" function

- Calling quotas: number of calls
  - The user can limit the maximum number of daily calls. He/she should put 0 if this service is not required.
  - The user can limit the maximum number of hourly calls. He/she should put 0 if this service is not required.
  - The user can reset to put the calling counter back to zero.

- Dialout accounts: the user can add a new customer account. For this, click on “account” and enter the parameters of the new customer account (name, number, login, password…) and then click on “add”. GOLDENEAGLE DVB-T/H can manage several accounts.

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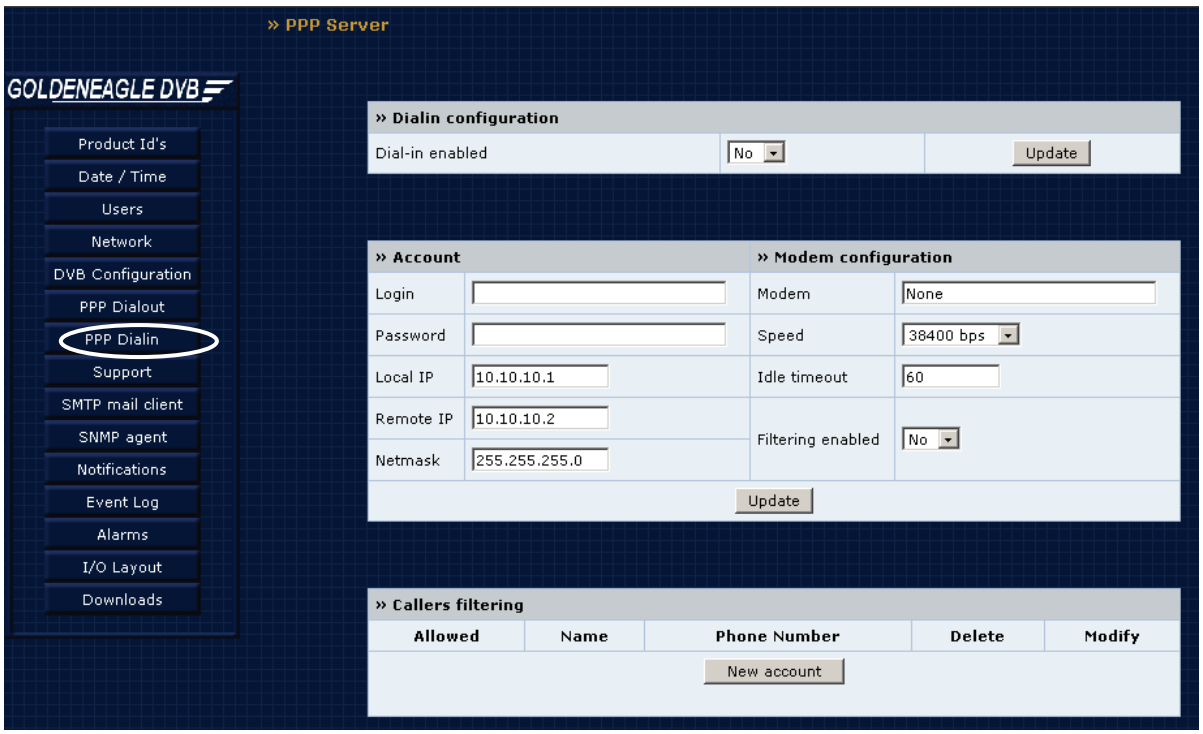
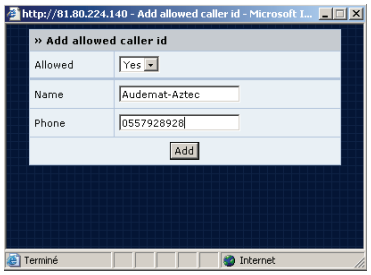
4.7. PPP DIALIN



➢ **To configure calls coming from the server:**

- Dialin configuration: installation of “incoming calls" functions.
- Account: the user configures account information.
- Modem configuration: the user selects the used modem (if necessary) and its features.

  The “filtering enabled" function enables incoming calls to be filtered (the incoming telephone line must be set for this).
- Callers filtering: the user can enter a new account by clicking on “new account" and entering its parameters. This enables authorized or non authorized incoming calls to be managed.



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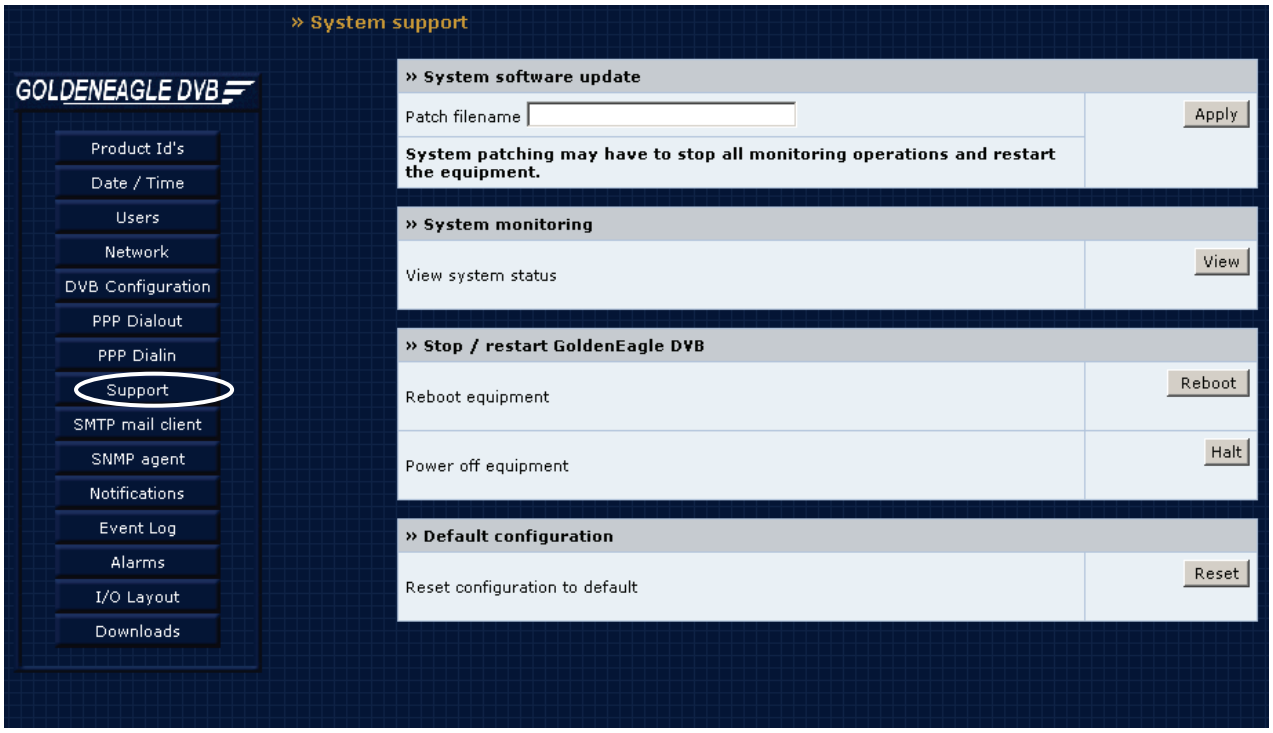
4.8. SUPPORT



➢ **Configuration of support system:**

- System software update: GOLDENEAGLE DVB-T/H update with the latest software version. The user must put patch file name in the window: update is automatic when clicking on “apply”.

- System monitoring: by clicking on “view" the user can check the system status in table form (temperature, date, ram disk).

- STOP/Restart IP2 Choice:

  - “Reboot equipment”: this function enables the entire equipment to be started up again.
  - Power off: is for switching off the equipment remotely.

    NOTE: the equipment cannot be switched on remotely.

- Default configuration: this function will enable the user to delete the present configuration and to put back the default configuration. **Caution**: all the parameters will be deleted as well as the scripts and log files.

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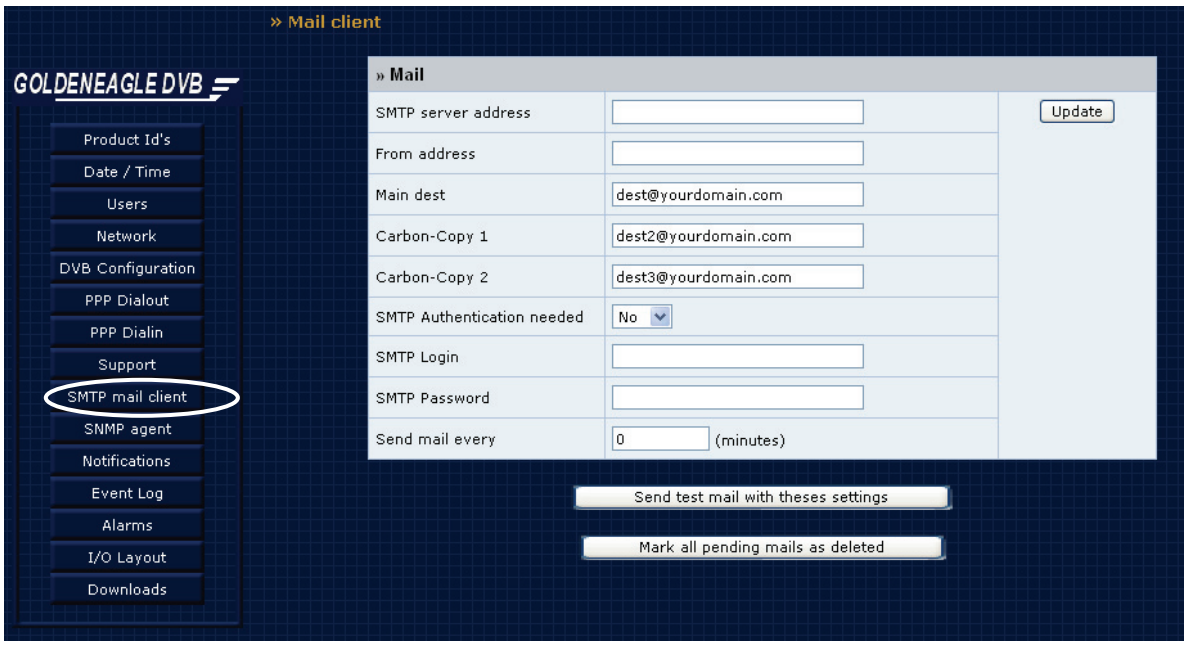
4.9. SMTP Mail client



- **Configuration of email parameters**
  - Enables email account and destination addresses to be configured.
  - The “Send mail every" window is for sending messages every “X” minutes when needed. While waiting for the user to choose the time, GOLDENEAGLE DVB-T/H will stock the messages.
  - Ask the network administrator for parameters.
  - The “Send test mail” will send a trial e-mail
  - The “Mark all pending mails as deleted" deletes e-mails which are on hold in the outbox.

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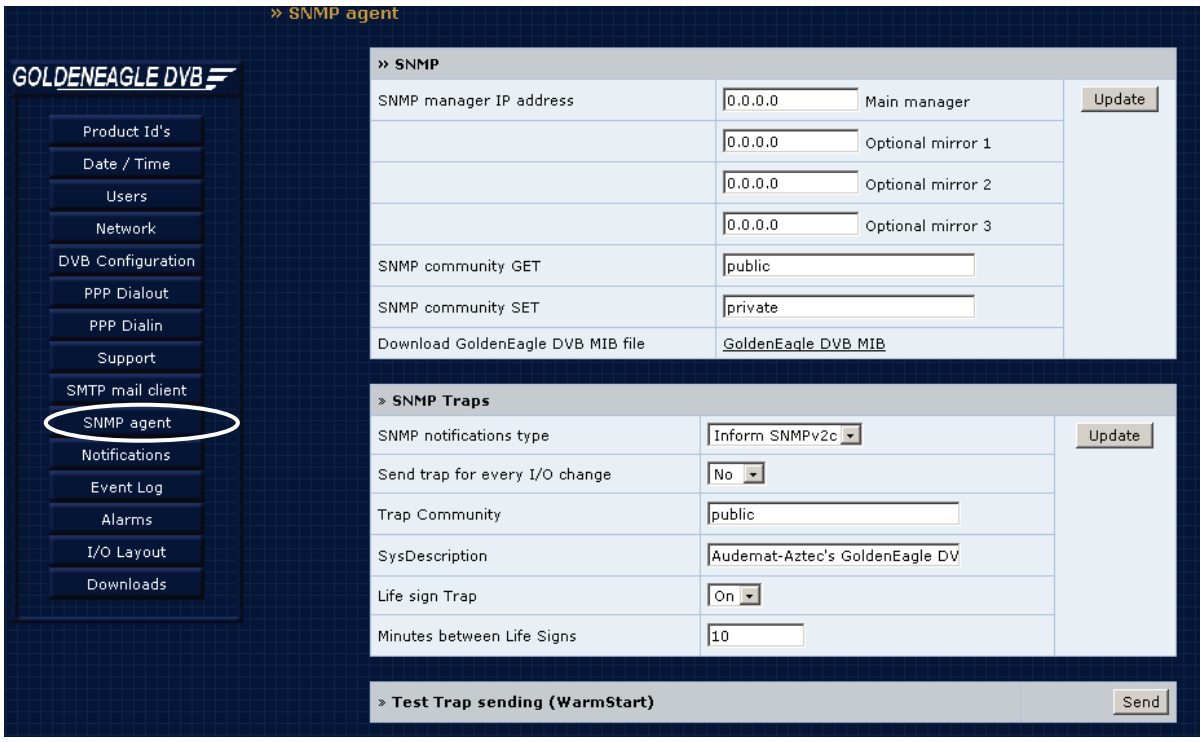
4.10. SNMP AGENT



- **Configuring SNMP parameters**. The user may download GOLDENEAGLE DVB-T/H's "MIB".

- **Configuring SNMP Traps** which the user has chosen to send. The traps may be sent to 4 addressees (Main Manager and optional mirror). *

  - SNMP notification type (see 4.9.2)/ Trap community/ SysDescription: trap parameters

  - Life sign Trap/ Minute between life signs: sending life sign trap every "X" minutes.

  - Test Trap: enables the user to carry out a test according to how he/she has set the traps.

*** CAUTION:**

GOLDENEAGLE DVB-T/H enables multiple addressees to be configured for notification. However, only the Main Manager has the authority to acquit notifications. In the case of INFORMS messages, secondary manager automatic responses are ignored by GOLDENEAGLE DVB-T/H.

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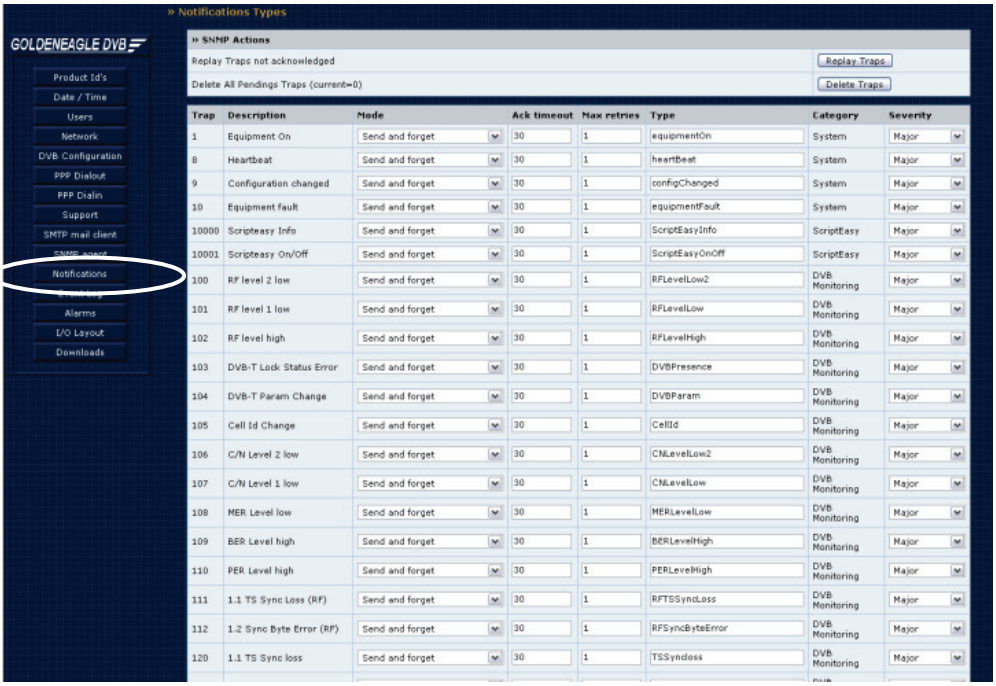
4.10.1. Supported SNMP versions

GOLDENEAGLE DVB-T/H implements an SNMP agent conforming to SNMPv1 and SNMPv2c versions. GET and SET commands are supported, as well as GETBULK in SNMPv2c. Notifications can be transmitted in TRAP V1 or V2c form or with an INFORM V2c type.

4.11. NOTIFICATIONS


» Notifications Types
GOLDENEAGLE DVB
Product Id's
Date / Time
Users
Network
DVB Configuration
PPP Dialout
PPP Dialin
Support
SMTP mail client
Notifications
Alarms
I/O Layout
Downloads
» SNMP Actions
Replay Traps not acknowledged
Replay Traps
Delete All Pendings Traps (current=0)
Delete Traps
Trap
Description
Mode
Ack timeout
Max retries
Type
Category
Severity
1 Equipment On Send and forget 30 1 equipmentOn System Major
8 Heartbeat Send and forget 30 1 heartBeat System Major
9 Configuration changed Send and forget 30 1 configChanged System Major
10 Equipment fault Send and forget 30 1 equipmentFault System Major
10000 Scripteasy Info Send and forget 30 1 ScriptEasyInfo ScriptEasy Major
10001 Scripteasy On/Off Send and forget 30 1 ScriptEasyOnOff ScriptEasy Major
100 RF level 2 low Send and forget 30 1 RFLevelLow2 DVB Monitoring Major
101 RF level 1 low Send and forget 30 1 RFLevelLow DVB Monitoring Major
102 RF level high Send and forget 30 1 RFLevelHigh DVB Monitoring Major
103 DVB-T Lock Status Error Send and forget 30 1 DVBPresence DVB Monitoring Major
104 DVB-T Param Change Send and forget 30 1 DVBParam DVB Monitoring Major
105 Cell Id Change Send and forget 30 1 CellId DVB Monitoring Major
106 C/N Level 2 low Send and forget 30 1 CNLevelLow2 DVB Monitoring Major
107 C/N Level 1 low Send and forget 30 1 CNLevelLow DVB Monitoring Major
108 MER Level low Send and forget 30 1 MERLevelLow DVB Monitoring Major
109 BER Level high Send and forget 30 1 BERLevelHigh DVB Monitoring Major
110 PER Level high Send and forget 30 1 PERLevelHigh DVB Monitoring Major
111 1.1 TS Sync Loss (RF) Send and forget 30 1 RFTSSyncLoss DVB Monitoring Major
112 1.2 Sync Byte Error (RF) Send and forget 30 1 RFSyncByteError DVB Monitoring Major
120 1.1 TS Sync loss Send and forget 30 1 TSSyncloss DVB Monitoring Major

- For configuring individually each type of configuration (see chapter SNMP agent, 4.10)
  - "Do not send": used for temporarily suspending sending certain types of alerts.
  - "Send and Forget": standard SNMP mode, no acknowledgement awaited, notifications are destroyed immediately after sending.
  - "Resend until acknowledged": standard GOLDENDVB-T/H alarm mode. Notifications are re-transmitted until acknowledgement reception. The acknowledgement mode depends on the sending mode:
    - automatic acknowledgement for sending with INFORM
    - manual acknowledgement for Traps V1 and Traps V2c

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4.11.1. Principle of re-transmission / acknowledgement functioning

As long as its acknowledgement has not been received, the notification is re-transmitted at the rate of one sending every <d> seconds, for a maximum of <n> times; where <d> and <n> are respectively <Ack Timeout> and <Max Retries> fields of the embedded web site's "Notifications" page.
If acknowledgement does not arrive after <n> attempts, the notification will be "frozen", that is to say, it is put on standby until a new notification of the same type appears. It can also be manually unblocked by using the "Replay Traps" button from the "notifications" page.

It is important to note that non transmitted notifications are not lost. They are kept to be retransmitted as soon as the right conditions are met. When a new notification appears, the "frozen" notification is reactivated and a cycle of sending attempts begins again.

4.11.2. Events inciting sending an SNMP notification

- **Alarms and information of functioning system:**

  - ColdStart: this is the very first message sent by GOLDENEAGLE DVB-T/H after its start up. This trap is part of the SNMP protocol, it cannot be acknowledged and is never re-transmitted.
  - EquipmentOn (identifier: 1): this is the equivalent of ColdStart but can be acknowledged and re-transmitted if necessary. Transmitted just after the ColdStart.
  - Equipment log full (identifier: 4): reserved for future use.
  - Equipment configuration evolution (identifier: 8): notification sent at regular intervals to give a sign of life of the equipment. Configurable on the "SNMP agent" page.
  - EquipmentFault (identifier: 10): Transmitted on critical applicative error or system breakdown.

- **Specific applicative alarms (ScriptEasy)**

  - Scripteasy alarm (Info) (identifier: 10000): ScriptEasy INFO type alert (event with no distinct beginning or end)
  - Scripteasy alarm (On/Off) (identifier: 10001): ScriptEasy ON/OFF type alert (event marking the beginning or end of a state)

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Common variables attached to all previous notifications (refer to MIB for OID's):

ConfigurationalarmTypeeventId	Event identifier (trap identifier)
alarmPendingAlarmsalarmValue	Secondary identifier: event origin (informed only for scripteasy alarms, with alarm object identifier at origin of notification)
alarmPendingAlarmsalarmStatus	Possible values: 1 = INFO,ON 2 = ON/OFF,BEGIN 3 = ON/OFF,END 4 = INFO,OFF
alarmPendingAlarmsalarmSeverity	Event severity (configurable in ScriptEasy Alarm objects)
alarmPendingAlarmsalarmLastDateOccurred	Event date
alarmPendingAlarmsalarmLastHourOccurred	Event time
alarmPendingAlarmsalarmAck	Variable on which SET is made to acknowledge manually
configurationSnmpTrapSequenceCounter	Counter for notifications not yet acknowledged
configurationalarmTypeeventDescription	Free text, supplementary information on the event

4.11.3. Table of inputs/outputs

Three tables dispay the current state of a device's inputs and outputs.

- The slot configuration table which shows the layout of the mini boards (.sys.io.slots.slotsLayoutTable)

slotsLayoutSlotNumber	Slot number (counted from 0)
slotsLayoutHWVersion	Hardware version of mini board
slotsLayoutSWVersion	Software version of mini board (if applicable)
slotsLayoutCardType	Type of mini board: "Analogic input" "Digital input" "Digital output" "empty"

- Table of digital Inputs (.sys.io.dig.digStatusTable)

digStatusSlotNumber	Slot number (counted from 0)
digStatusInputNumber	Port number (counted from 0)
digStatusInputName	Input name
digStatusNormalState	Normal state (0 or 1)
digStatusstartOfIncident	Date and time of beginning of incident
digStatusendOfIncident	Date and time of end of incident
digStatusErrCode	Free error code
digStatusErrMessage	Free error message
digStatusValue	Current value (0 or 1)

- Table of relay Outputs (.sys.io.rel.relStatusTable)

relStatusSlotNumber	Slot number (counted from 0)
relStatusOutputNumber	Port number (counted from 0)
relStatusOutputName	Relay name
relStatusNormalState	Normal state (0 or 1)
relStatusLastChange	Date and time of last change of state
relStatusValue	Current value (0 or 1)

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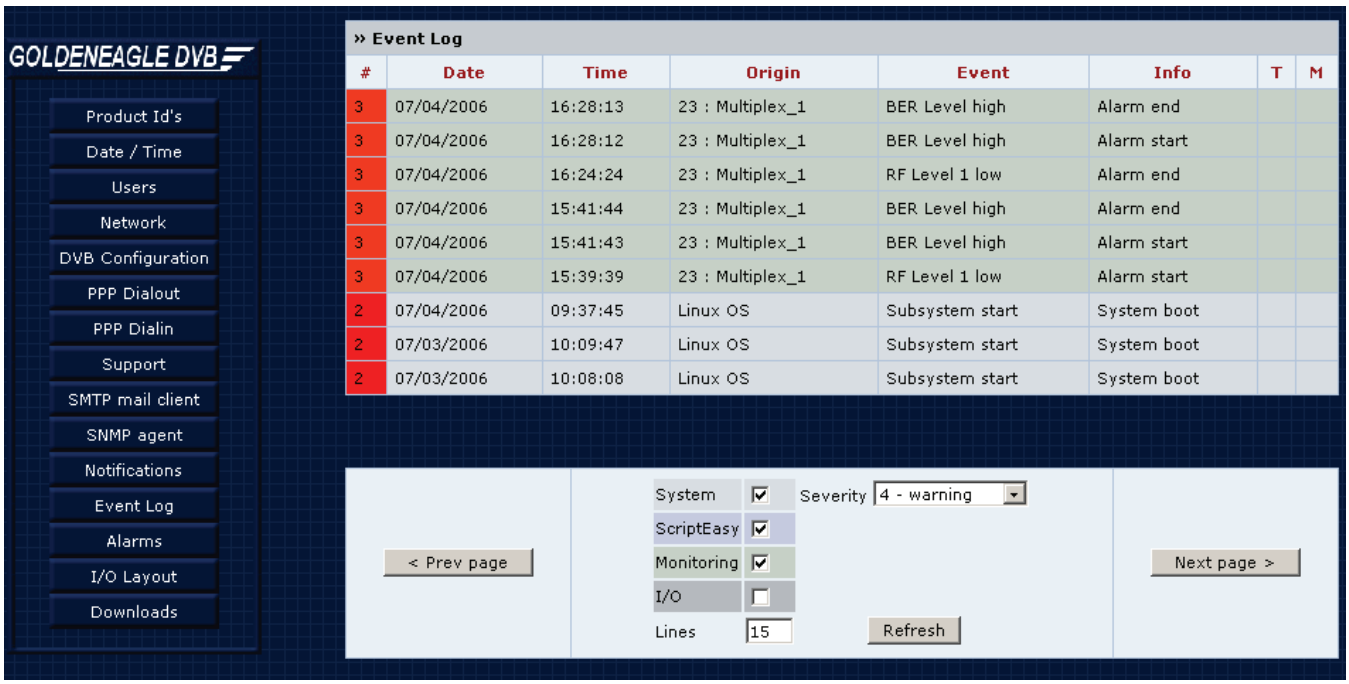
4.12. EVENT LOG



- Event report. The user can sort:
  - By checking “System" he/she can view the system’s alarms and/or “application” for the application’s alarms and/or “I/O” for inputs-outputs. The number of lines that he/she wants to see can also be chosen.
  - The user can also choose to view events according to the severity (0 being the highest level of severity). Now click on “refresh” to take into account the carried out selection:
    - 1: alert
    - 2: critical
    - 3: error
    - 4: caution
    - 5: note
    - 6: information

Note: if, for example, the user chooses “error” 3, he/she will have all the alarms from 0 to 3.

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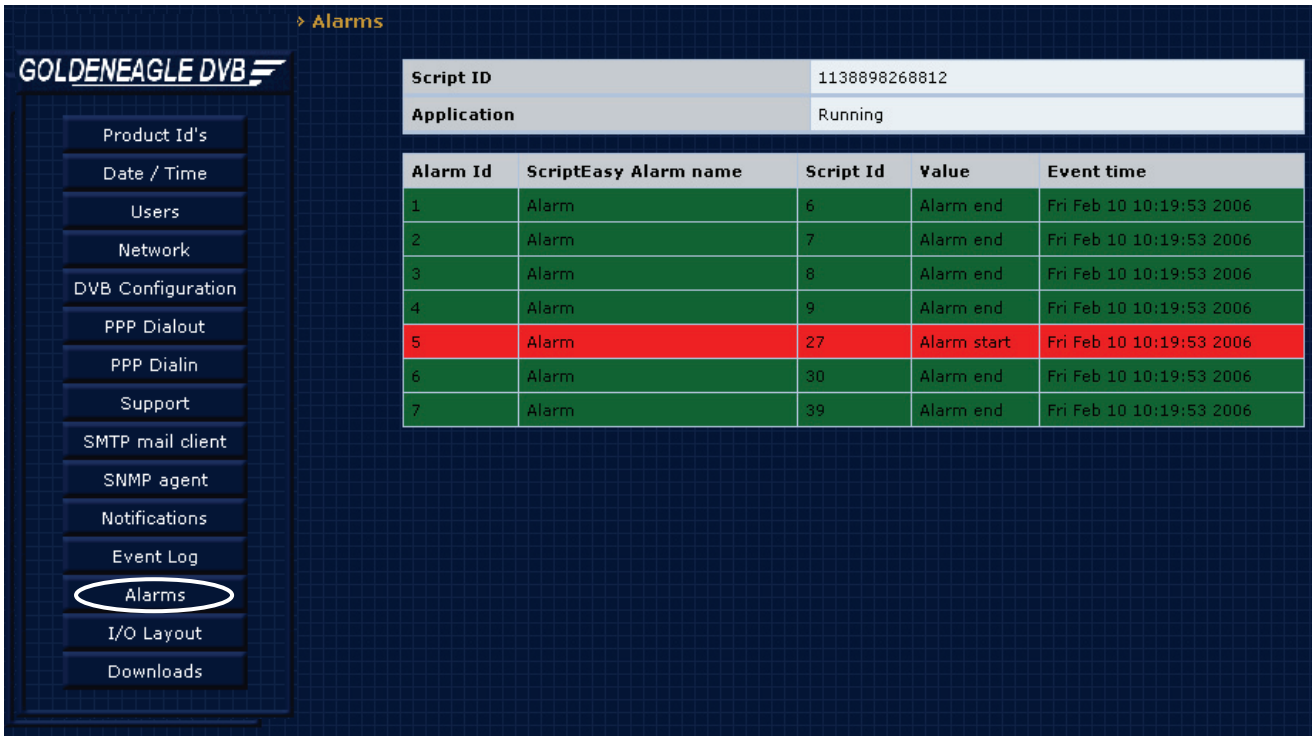
4.13. ALARMS

Please refer to the ScriptEasy documentation, available on www.audemat-aztec.com in the GOLDENEAGLE DVB-T/H "Download" section.


Alarms
GOLDENEAGLE DVB
Product Id's
Date / Time
Users
Network
DVB Configuration
PPP Dialout
PPP Dialin
Support
SMTP mail client
SNMP agent
Notifications
Event Log
Alarms
I/O Layout
Downloads
Script ID 1138898268812
Application Running
Alarm Id | ScriptEasy Alarm name | Script Id | Value | Event time
1 | Alarm | 6 | Alarm end | Fri Feb 10 10:19:53 2006
2 | Alarm | 7 | Alarm end | Fri Feb 10 10:19:53 2006
3 | Alarm | 8 | Alarm end | Fri Feb 10 10:19:53 2006
4 | Alarm | 9 | Alarm end | Fri Feb 10 10:19:53 2006
5 | Alarm | 27 | Alarm start | Fri Feb 10 10:19:53 2006
6 | Alarm | 30 | Alarm end | Fri Feb 10 10:19:53 2006
7 | Alarm | 39 | Alarm end | Fri Feb 10 10:19:53 2006

- The user must enter a script to view the alarms
  - 1 | 000 - Out 5-0 — Green indicates that the alarms are over or not activated.
  - 10 | 004 - Disjoncteur QN — Orange indicates the beginning of an alarm. The error condition remains active.

- This table shows the current state of the script's Alarm objects whilst operating on the device

Detail of table fields

scripteasyAlarmsidScriptObject	Identifier of the object in the script
scripteasyAlarmsName	Alarm number associated with this object
scripteasyAlarmsseverity	Severity affected to the alarm
scripteasyAlarmsValue	1 = INFO,ON 2 = ON/OFF,BEGIN 3 = ON/OFF,END 4 = INFO,OFF
ScripteasyEventTime	Date and time of latest event

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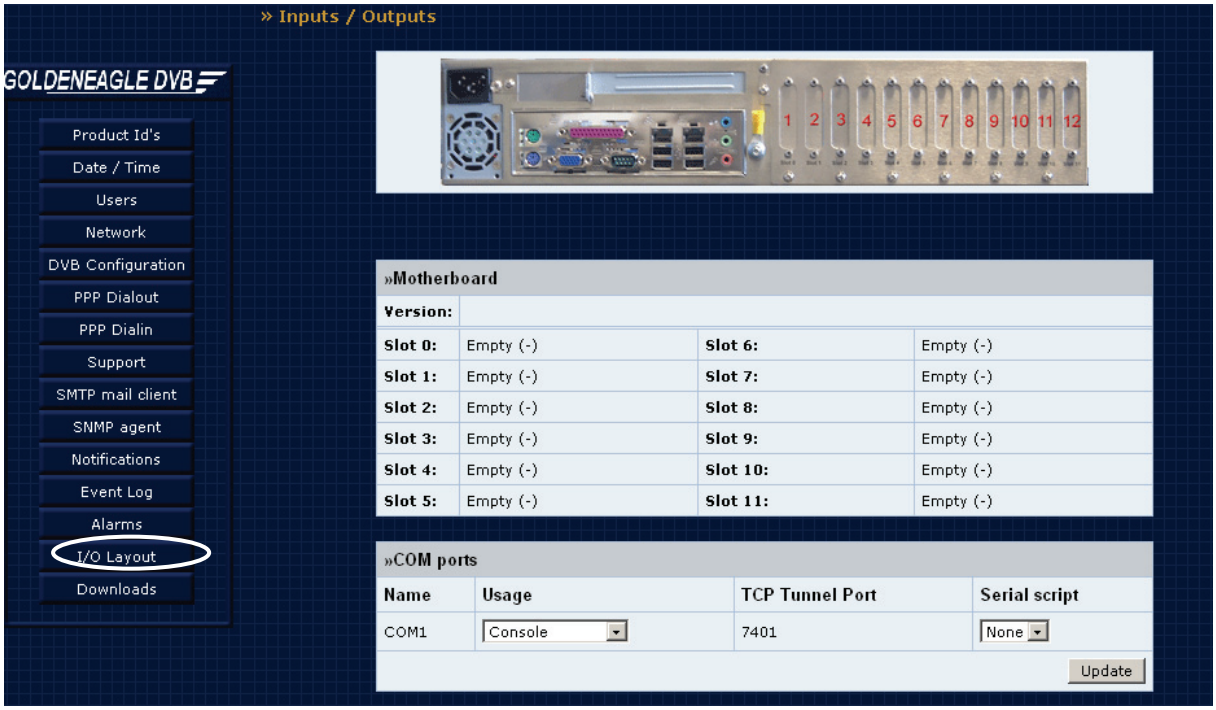
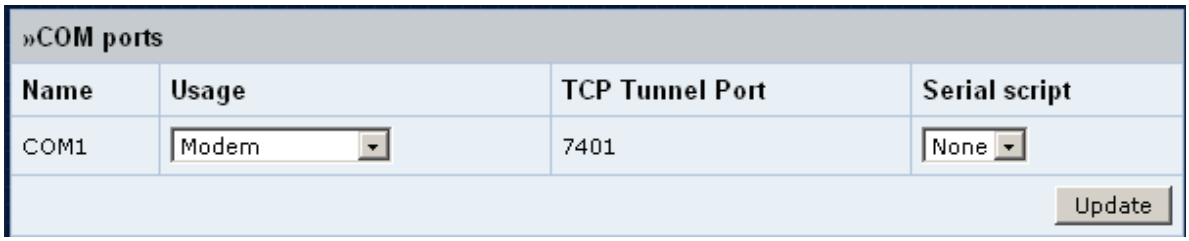
4.14. I/O LAYOUTS

NOTE: Only the 5 first slots are available



- Motherboard: the user can view the type of boards (relay, digital) and their situation on the used slots.



- **Com Port**: COM0 and COM1 ports can be found by default.
  - Modem: configuration of serial port in modem port.
  - Console: configuration of serial port in console port.
  - Unset: non attributed serial port (inactive).
  - Support: support port. Only used by Audemat-Aztec.
  - Tunelling: serial port configuration by tunnelling.
  - Scriptlet: to use an API to communicate with external equipment (contact the commercial service for more information).
  - Scriptlet debug: do not use.

Caution: once the console port is deactivated, you can no longer access GOLDENEAGLE DVB-T/H terminal mode.

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➢ This enables the serial ports to be added dynamically. Contact Audemat-Aztec to check compatibilities.

4.15. DOWNLOAD

This page enables you to download the portal application for “GOLDENEAGLE DVB-T/H”:

⇨ Java application dedicated to DVB monitoring
  ⇨ Access to ScriptEasy: creator module et viewer module
  ⇨ Access to ScriptEasy manual

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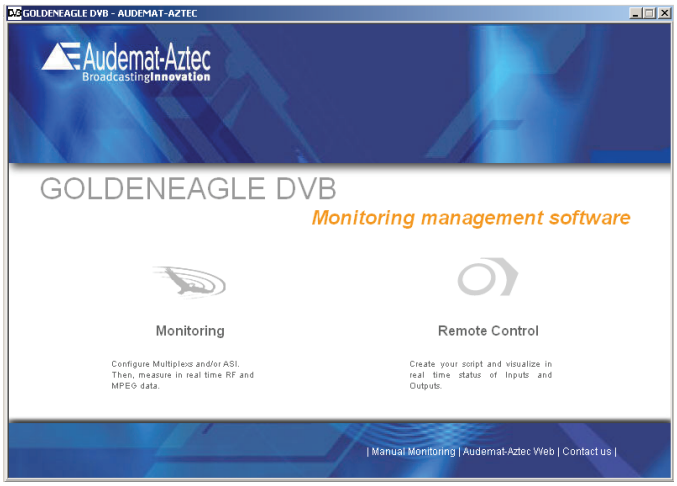
5. CONFIGURATION

5.1. Launching the GOLDENEAGLE DVB-T/H application

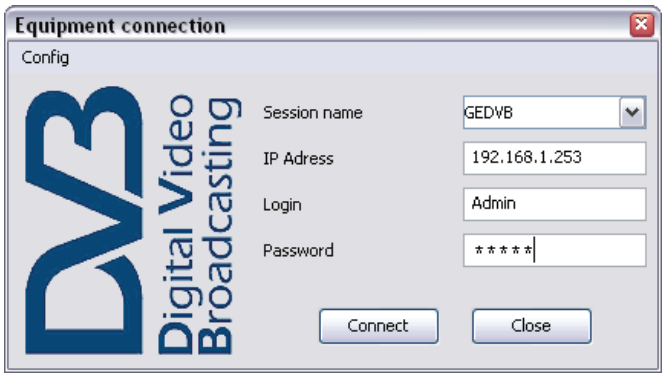
A Java application called “GOLDENEAGLEDVB-T/H" is included in the unit and is available for downloading on the embedded web site in the “Download" tab. To use this application, you must previously have established TCP/IP communication with the GOLDEN DVB-T/H.

Once the application has been downloaded, click on “Monitoring" to access the application and start it up (the Remote Control part is for accessing the ScriptEasy software in order to create and view scripts).


GOLDENEAGLE DVB - AUDEMAT-AZTEC
Audemat-Aztec
BroadcastingInnovation
GOLDENEAGLE DVB
Monitoring management software
Monitoring
Remote Control
Configure Multiplexs and/or ASI. Then, measure in real time RF and MPEG data.
Create your script and visualize in real time status of Inputs and Outputs.
| Manual Monitoring | Audemat-Aztec Web | Contact us |

First type a name in the "session name": the user can give a name to a session and find it later.
Enter IP address as well as chosen login and password (“Admin”/ “admin” by default).

The IP address parameters match the information found on the “Network” tab of the embedded website.
The login and password parameters match the information found on the “Users” tab of the embedded website.



The application allows to create several connection account.s.

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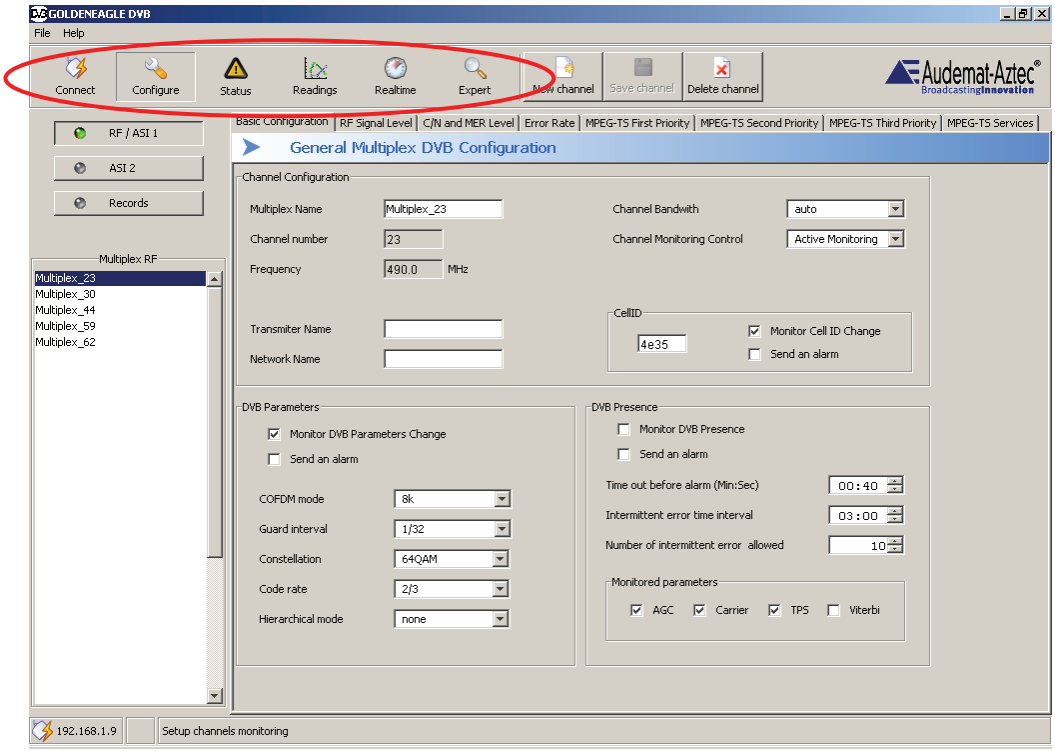
Once connection has been established, click on the “Configure" tab to begin configuring your equipment.



Five menus are available:

- **“Configure”**: to define the configuration of the channels to be monitored
- **“Status”**: gives the state of the monitored channels
- **“Readings”**: enables access to cumulated measurements
- **“Realtime”**: for access to measurements in real time
- **“Expert”**: enables access to DVB-H mode **(option)**

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5.2. "Configure" tab

5.2.1. Functioning mode

Depending on the product bought, buttons will appear on the application (see examples below).

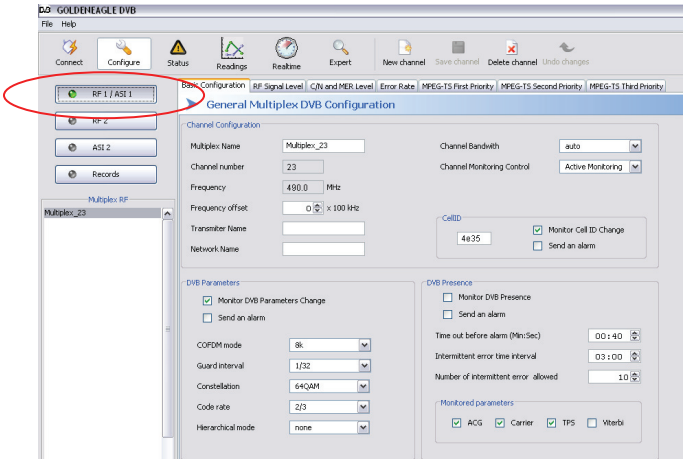
Note:
In mode **RF + ASI**, two modes are possible:

- Linked mode: monitoring ASI flow and the one decoded by the RF receiver (and therefore of the selected frequency)
- Independent mode: no correlation when monitoring ASI and RF.

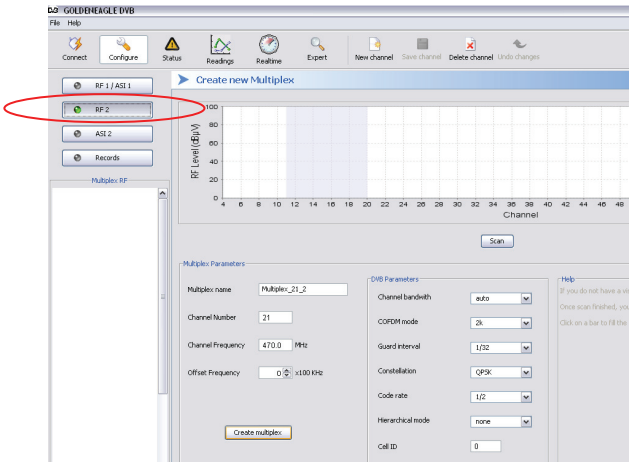
⇨ Both tabs are accessible.

Examples in RF/ASI linked mode and RF/ASI in non linked mode (there are 4 tabs):

↳TAB 1 : RF1/ASI1



↳TAB 2 : RF2



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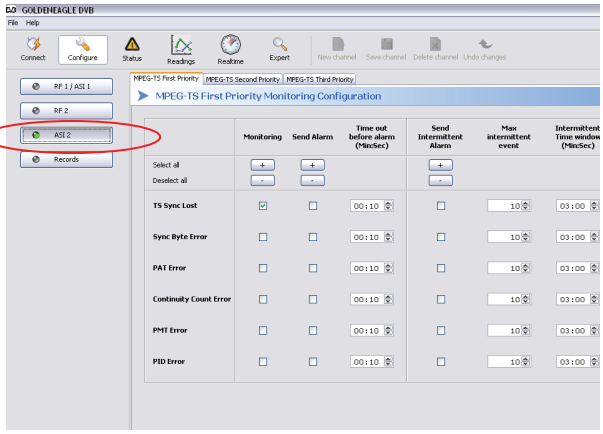
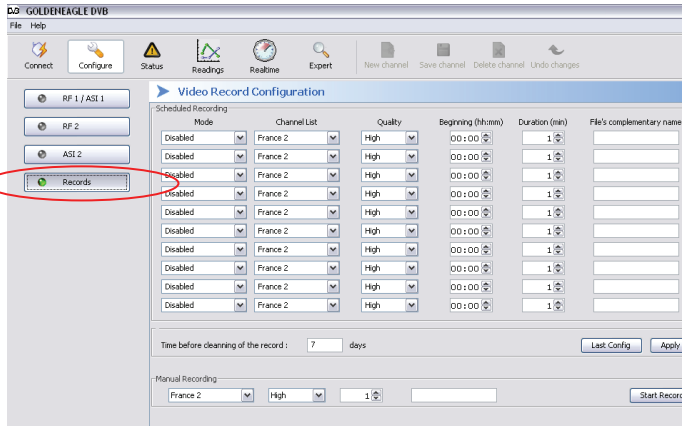
↳TAB 3 : ASI 2

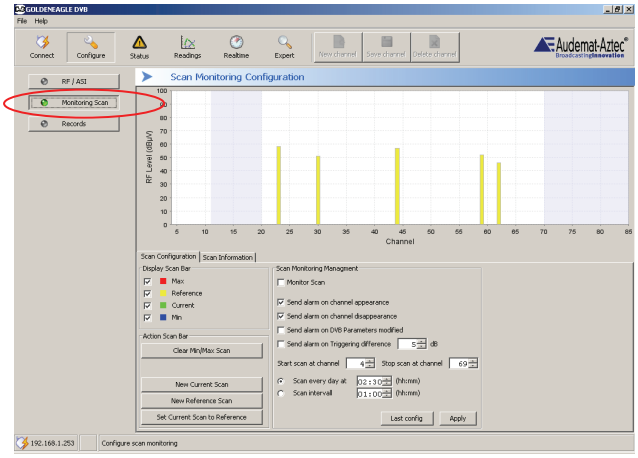


↳ TAB 4 : records

Note: non recording for flow providing from ASI inputs.



↳TAB 5 : Monitoring scan



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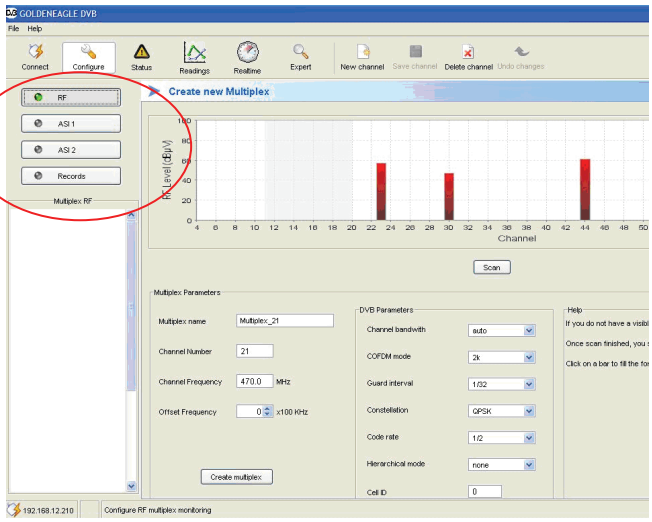
Example 2: RF/ASI in non linked mode and 2nd ASI input in option



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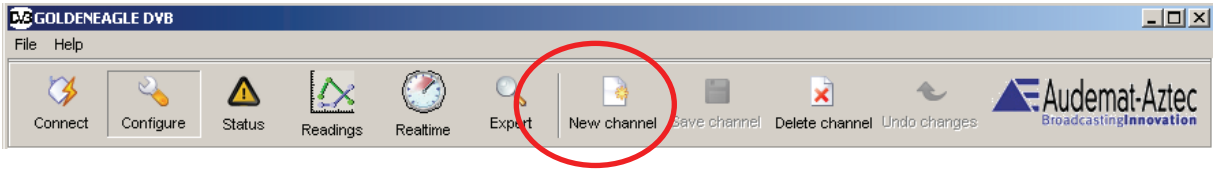
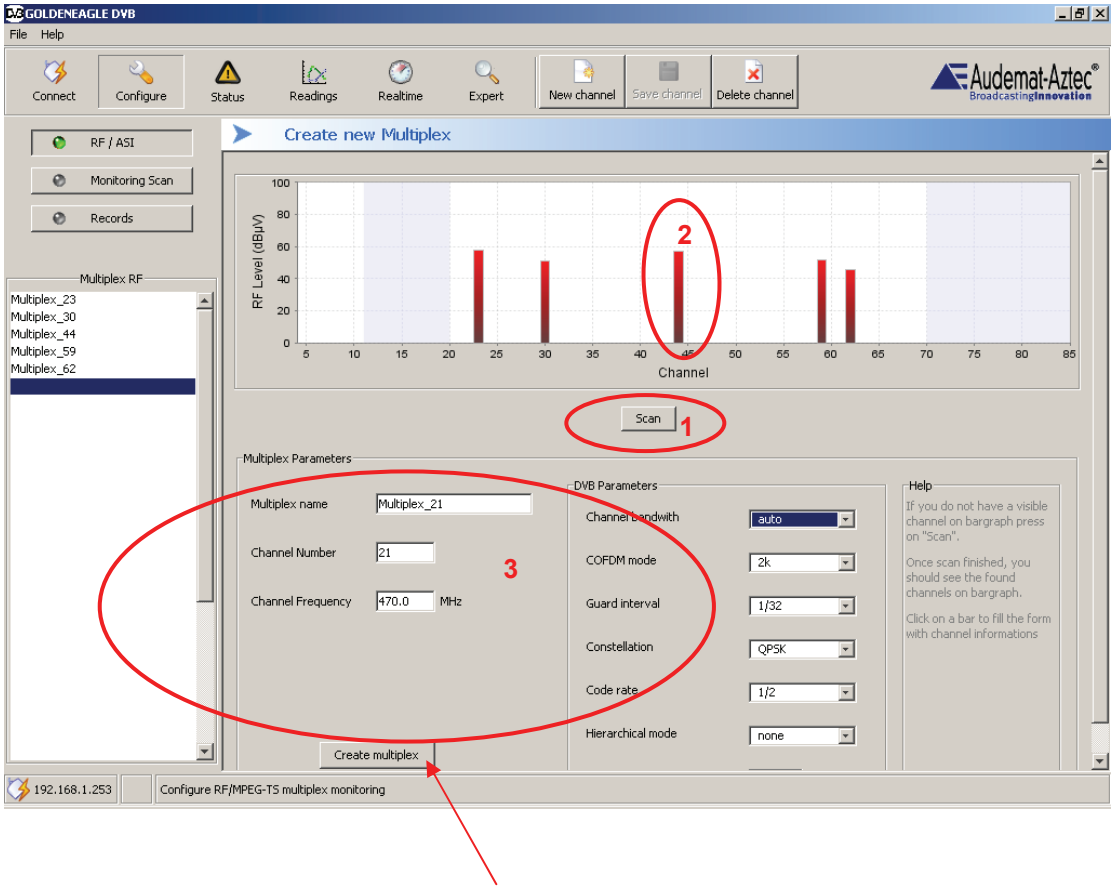
5.2.2. Creating a new channel:



Click on “New channel”, there are now two possibilities:

- either click on “rescan" **(1)**, in order to have the multiplex representation present in the band; then by clicking on the desired bar, “parameters" fields **(2)** automatically fill in
- or fill in necessary information manually **(3)**:
  - name
  - channel number
  - channel frequency
  - offset frequency
  - DVB parameters



- Click on “create multiplex”

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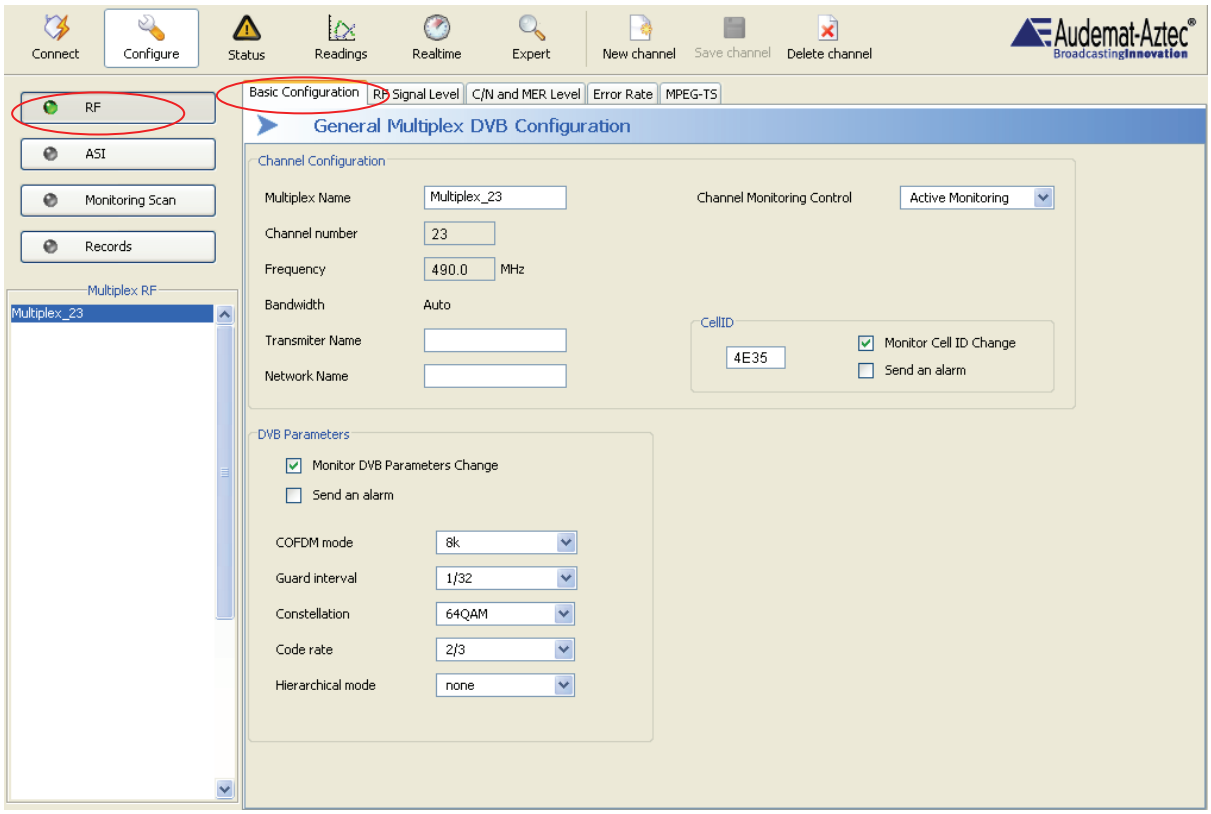
5.2.3. Configuration

5.2.3.1 RF part



5.2.3.1.1 Basic configuration:

Consisting of 3 windows

- Channel configuration: the “channel monitoring control" field enables this channel’s monitoring to be activated or put on stand-by.
- DVB Parameters: which pick up the parameters already configured in the previous step.
- DVB presence: for activating AGC, Carrier and TPS and Viterbi synchro monitoring.

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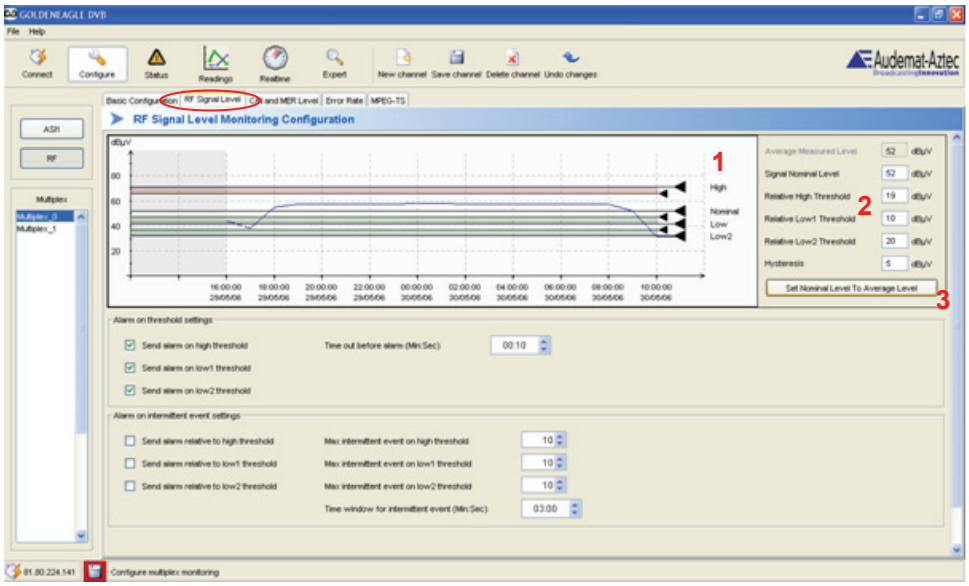
5.2.3.1.2 RF Signal level



This screen allows for configuring the 3 alarm triggering thresholds:

- high level
- low level 1
- low level 2.

These levels can be adjusted in different ways:

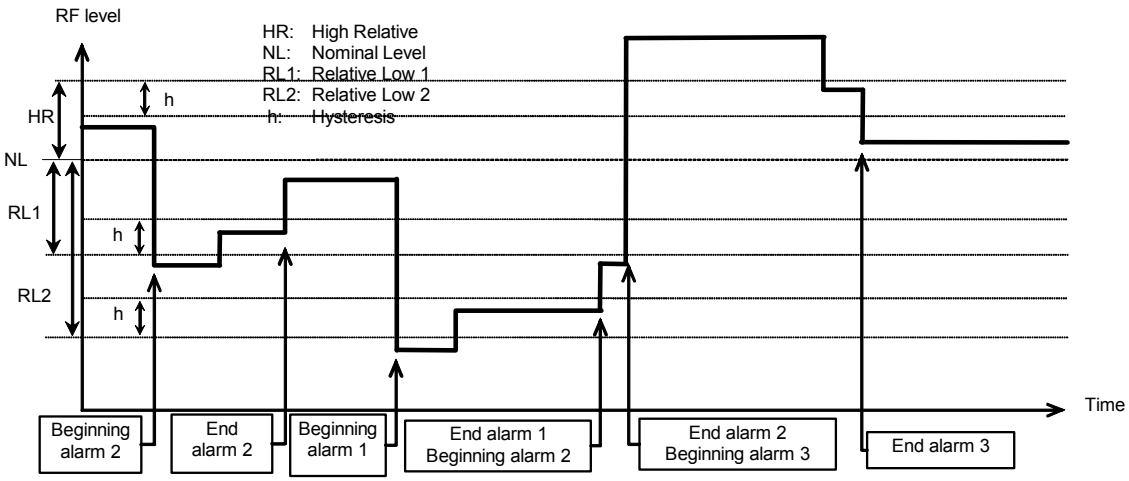
- graphically by moving the cursors **(1)**
- manually by value **(2)**
- automatically: in which case the nominal will be positioned on the measured average value (in blue). **(3)**

Important: the three levels are given in relative value according to the nominal.

There are now two possible ways to trigger off an alarm:

- threshold overshoots
- intermittent overshoots (number of overshoots can be set, just like the time window which has to be taken into consideration)

Explanation of thresholds and hysteresis:



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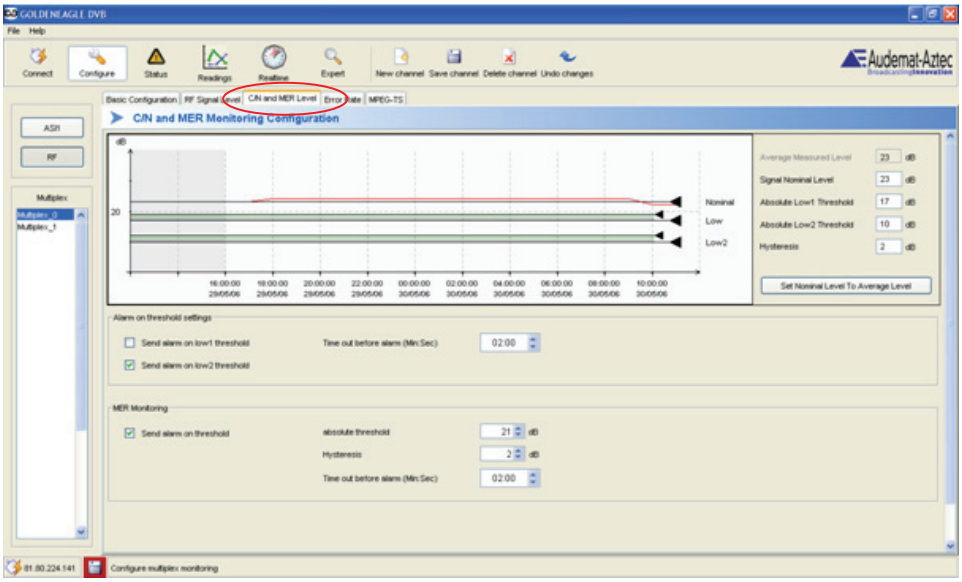
5.2.3.1.3 C/N and MER level



This screen allows the configuration of both alarm triggering thresholds:

- high level
- low level

These levels can be adjusted in different ways:

- graphically by moving the cursors
- manually by value
- automatically: in which case the nominal will be positioned on the measured average value (in red)

Important: the two levels are given in absolute value.

It is now possible to trigger off an alarm on threshold overshoot for the C/N and the MER. Hysteresis management is also possible for the MER parameter.

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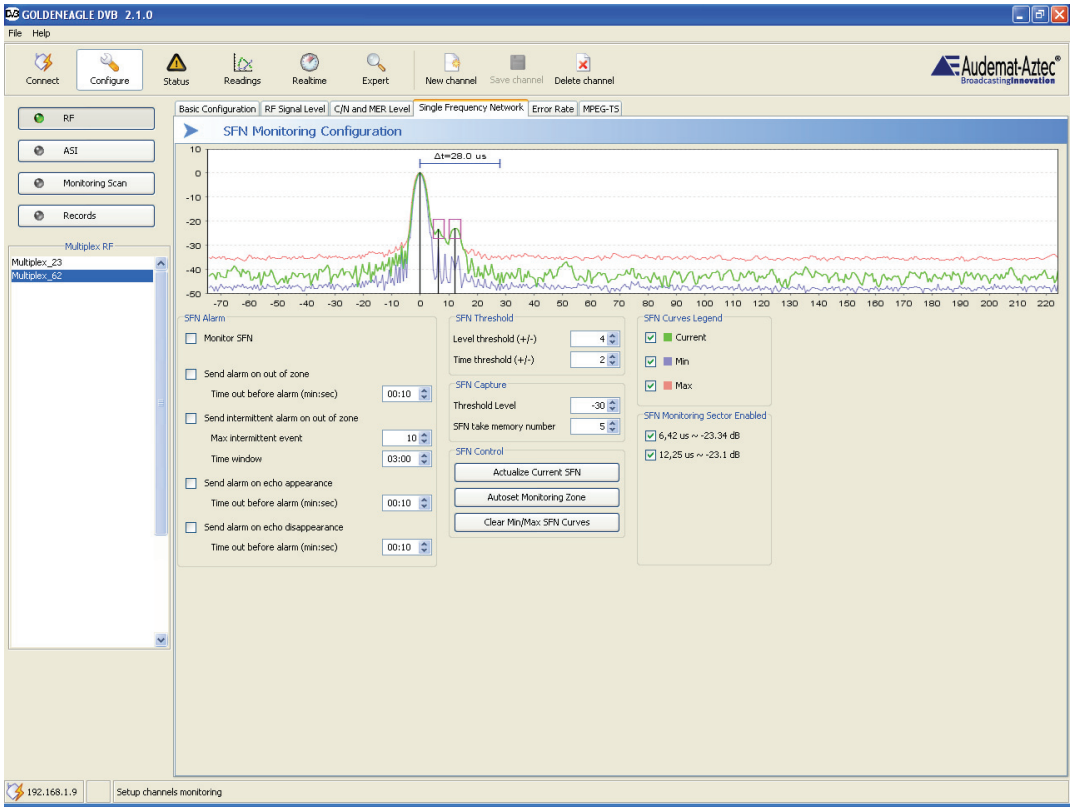
5.2.3.1.4 SFN Monitoring



In an MFN or SFN network, impulse response monitoring will allow: detection of echo or another transmitter appearance or disappearance, or echo or another transmitter shunt that could disturb the main signal.

When monitoring in multiplex, GoldenEagle DVB records one per minute and constantly analyses the impulse response so as to detect potential peaks

A graph displays detected peaks and curves, giving min, max and current values so as to evaluate level and time ranges within which echoes evolve and/or if a detected peak is significant.

In order to compensate for the measurement fluctuations, the application allows for parameter configuration: window size for measure averaging in take memory number and peak threshold level can be user-defined.

Out-of-bound peaks appear in red.

Once detected, the “Autoset Monitoring Zones" button will automatically set the peaks allowed tolerance zones: measured values, increased or decreased by user-defined parameters, one for level threshold, one for time threshold will be used.

From a list displaying recorded reference positions, a specific peak monitoring can be deactivated if no longer of interest.

Monitoring compares the current measure with the reference, and sends three types of alarm:

- A peak appearance alarm: the number of actual peaks is higher than the number of referenced peaks
- A peak disappearance alarm: the number of actual peaks is lower than the number of referenced peaks
- An out of zone alarm

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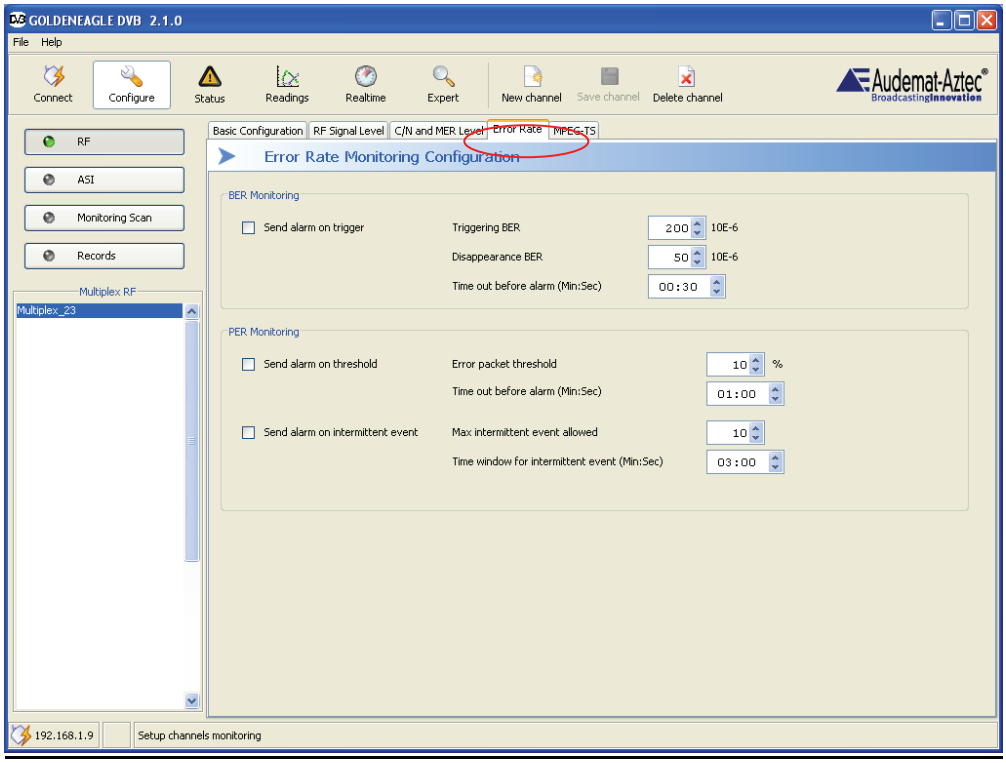
Note: a peak disappearing from a deactivated monitoring zone will nonetheless send a peak appearance alarm.

From that page, the following items can be configured:

- SFN monitoring activation (event with no alarm if deactivated)
- Echo appearance alarm activation
- Time delay before triggering an echo appearance alarm
- Echo disappearance alarm activation
- Time delay before triggering an echo disappearance alarm
- Out of zone alarm activation
- Time delay before triggering an out of zone alarm
- Intermittent alarm on out of zone activation
- Number of intermittent events before sending an alarm
- Time window for counting intermittent events

5.2.3.1.5 Error Rate



This function allows monitoring BER after viterbi and PER.

BER: the value of BER “Triggering" is a multiple of 10^{-6}. Ex: 200 . 10^{-6} → 2 . 10^{-4}
The “Disappearance BER" field corresponds to an “absolute" Hysteresis (threshold of alarm disappearance)

PER: There are two monitoring possibilities:

- By continuous threshold overshoots: in this case the threshold value is the percentage of erroneous packets / total number of packets.
- By intermittent threshold overshoots: in this case the number of overshoots are programmed.

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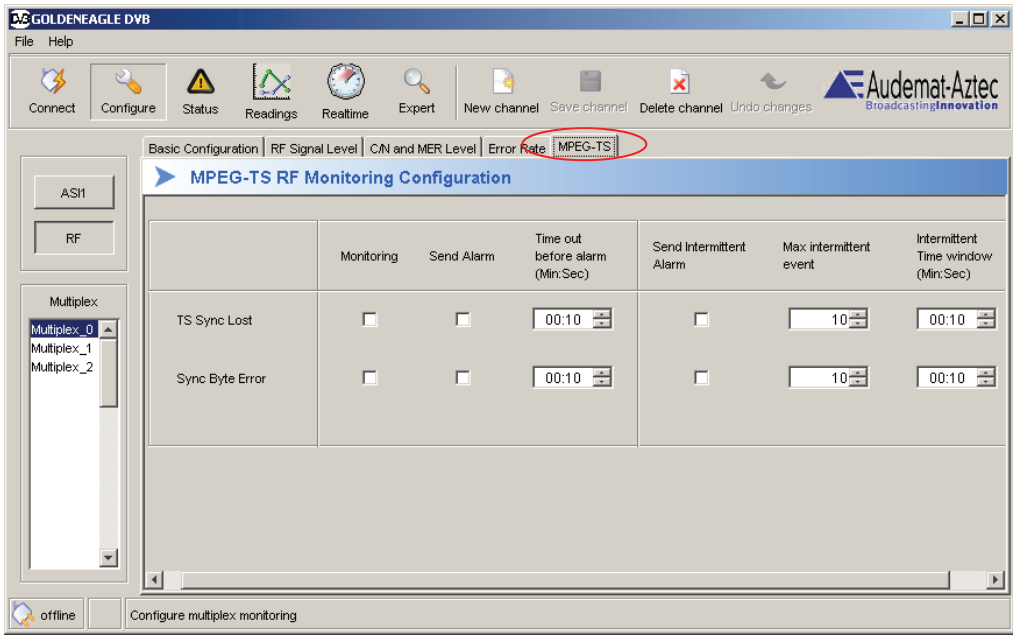
5.2.3.1.6 MPEG-TS



The RF receiver is used on its own; however, it can get “TS Sync Lost” and “Sync_Byte_error” information.

It is therefore possible to monitor “TS Sync Lost” and “Sync_Byte_error”. An alarm can be triggered off when there is a permanent or intermittent appearance.

Each TS (Transport stream) consists of 188 or 204 Bytes, 4 of which are “Headers”. The first Byte of this Header always has value 47 in Hexa. It enables frame beginning to be defined.

TS_sync_loss: loss of synchronization

Rule:
* No error if: at least 5 successive “sync_bytes" have been received
* Error if: 3 successive “sync_bytes" are not equal to 47hex

Sync_byte-error: occasional error in synchronization

Rule:
** Error if: 1 “sync_byte” is not equal to 47hex.

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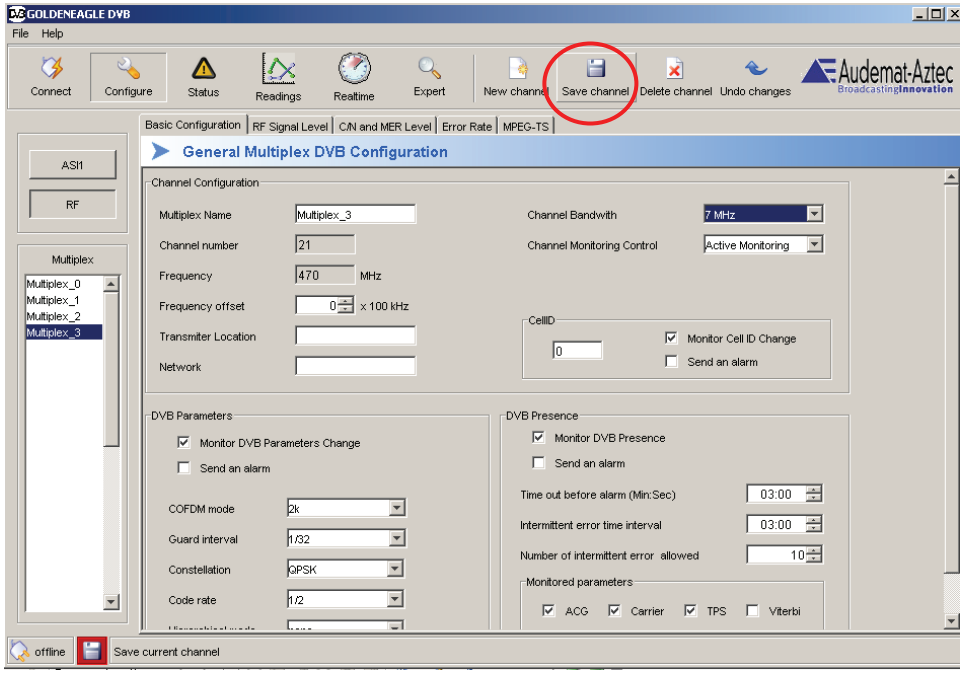
IMPORTANT: to save the information, click on “Save Channel" after any configuration. This applies to RF and to ASI.



5.2.3.2 *ASI part*

It is possible to access the configuration of the MPEG part by clicking on the ASI icon.

Depending on options, there might be up to six configuration tabs:

- General configuration
- MPEG-TS first Priority
- MPEG-TS second Priority
- MPEG-TS third Priority
- MPEG-TS MIP
- MPEG-TS Services

Each parameter can be monitored or “monitored with alarm sending”. The time during which the alarm lasts is also configurable.

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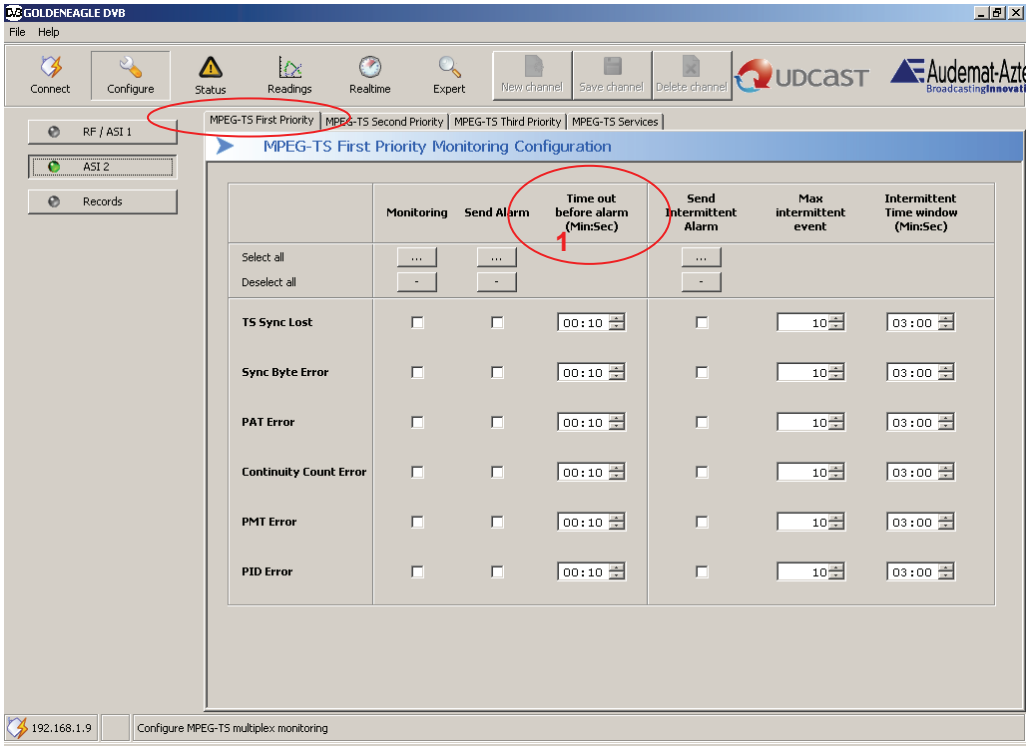
5.2.3.2.1 MPEG-TS first priority configuration



Details of alarms:

TS_sync_loss: loss of synchronization
Each TS (Transport stream) consists of 188 or 204 Bytes, 4 of which are “Headers”. The first Byte of this Header always has value 47 in Hexa. It enables frame beginning to be defined.

Rules:
* No error if: at least 5 successive “sync_bytes" have been received
* Error if: 3 successive “sync_bytes" are not equal to 47hex

Sync_byte-error: occasional error in synchronization
Each TS (Transport stream) consists of 188 or 204 Bytes, 4 of which are “Headers”. The first Byte of this Header always has value 47 in Hexa. It enables frame beginning to be defined.

Rule: Error if : 1 “sync_byte” is not equal to 47hex.

PAT_error:
Reminder: TS frame composition can be variable (1 or several video or audio programs, services…). It is therefore indispensable to define the contents using tables. The most important is PAT (Program Association Table): transmitted with the PID (packet identifier) 0, its role is to define the TS organisation (number of programs, identifier …

Rule: Error if:
- the PAT is not present
- repetition is not done every 500 ms
- the ID table is not zero
- ‘scrambling_control_field’ is not equal to 0

PMT_error: PMT (Program Map program) are in the PAT.
There is one per program in the multiplex. They contain all respective PID of each video/audio content.

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Rule: Error if:
- a PMT listed in the PAT is not present
- a section of PMT is not repeated after 500 ms
- 'scrambling_control_field' is not equal to 0
- the ID table is not equal to 2

PID_error (present in the FULL MPEG option):
Reminder: the PID is therefore the identifier of each table.

Rule: Error if:
- a packet of transport stream with a PID referenced in a PMT is not contained in the TS
- repetition is not done every 500 ms

Continuity_error: contained in the TS MPEG's header, it enables remultiplexing errors to be detected

Rule: Error if:
- the same TS packet is transmitted twice and discontinuity is not indicated
- a packet is forgotten and continuity is not indicated.

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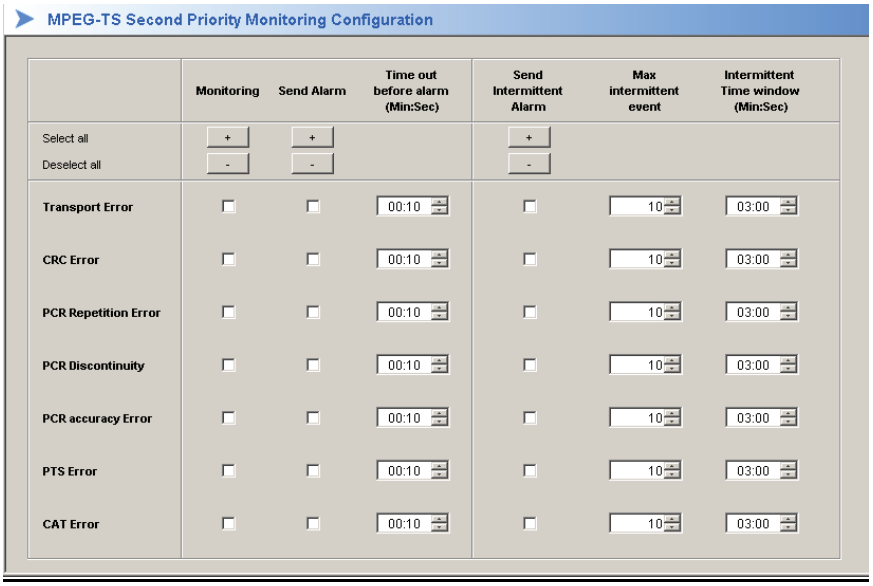
5.2.3.2.2 MPEG-TS Second priority configuration



Details of alarms:

Transport_error: contained in the Header of TS
Error if:
Protection error (reed solomon or viterbi) which does not enable all packets to be repaired.

CRC_error: contained in the Header of TS
Error if:
A table (PMT, PAT, CAT, NIT…) in a section has a checksum which does not correspond to the contents

PCR_error: Program Clock Reference
Error if:
- the difference between two successive values is above 100ms
- the time interval between two packets with PCR values is above 40 ms

PCR_accuracy_error: Program Clock Reference (MPEG FULL)
Error if:
- deviation between two PCR values is > 500ns (PCR jitter)

Time Stamp Error (PTS_error): audio/video synchronization element of a program (MPEG FULL)
Error if:
Time between two PTS values is above 700ms.

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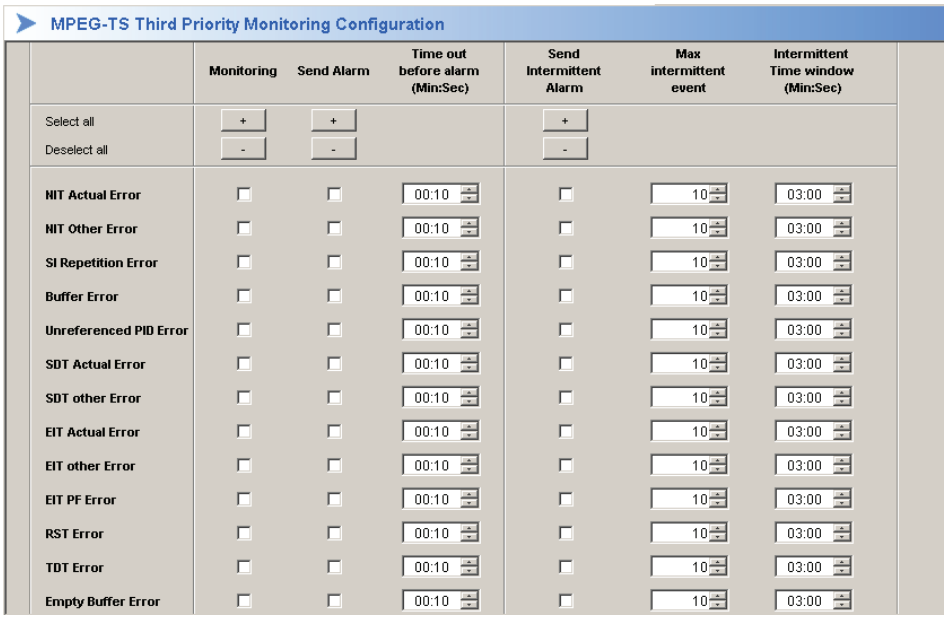
5.2.3.2.3 MPEG-TS Third Priority configuration



Details of alarms:

SI_Repetition_error

There are two types of DVB tables:

- PSI (program Specific information): PMT, CAT, PAT type compulsory tables.
- SI (Service information): not compulsory, they give information on services associated with the video contents (Event Information Table, Bouquet association Table, Time and Date Table…)

Error if:

- Time interval between SI table is too great
- Time interval between SI table is too small

SI	Max time	Min time
PAT	0.5s	25 ms
CAT	0.5s	25 ms
PMT	0.5s	25 ms
NIT	10s	25 ms
SDT	2s	25 ms
BAT	10s	25 ms
EIT	2s	25 ms
RST	-	25 ms
TDT	30s	25 ms
TOT	30s	25 ms

- Priority 3: NIT, SDT EIT RST TDT error
- Priority 3: PID undefined error
- Priority 3: SI other error
- Priority 3: NIT other error, SDT other error, EIT other error.

Note: Errors are monitored according to the norm TR 290 101.

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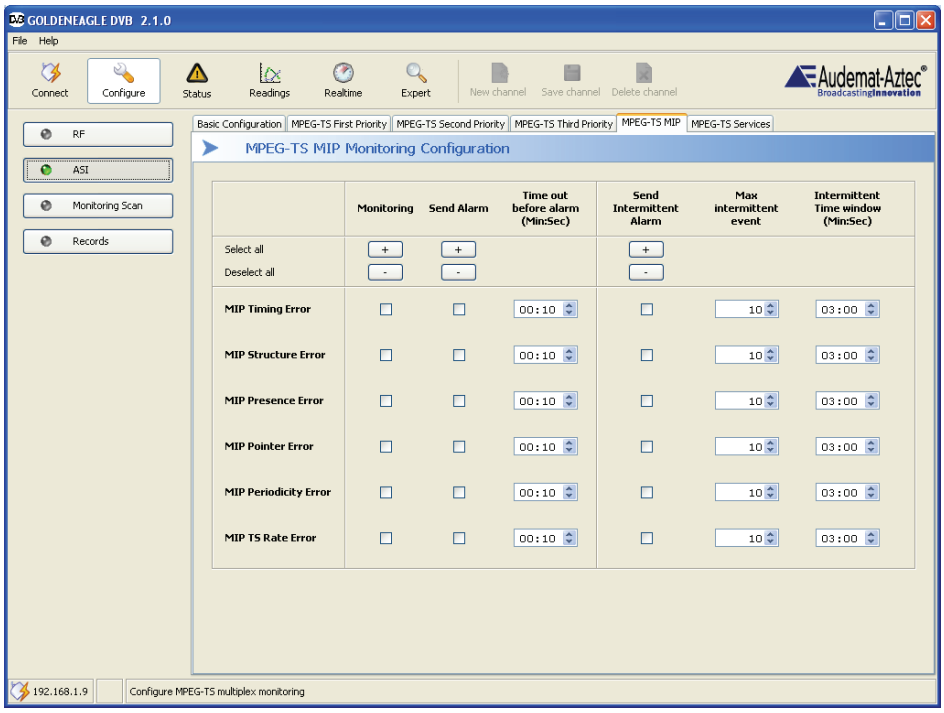
5.2.3.2.4 MPEG-TS MIP



MIP error monitoring uses the same principle as other MPEG error monitoring.

MIP_timing_error : The Synchronization Time Stamp (STS) values inserted in the Mega-frame Initialization Packet (MIP) must be correct. This test checks that successive STS values are self-consistent.

MIP_structure_error : This test verifies that the syntax of the MIP complies with the specification.

MIP_presence_error : This test verifies that the MIP is inserted into the transport stream only once per megaframe.

MIP_pointer_error : The MIP insertion can be at any location in the mega-frame. If the insertion is periodic as defined in the MIP, the MIP location in the mega-frame is constant over time. The MIP can be used to determine the mega-frame size and where each mega-frame starts and ends in the transport stream thanks to the pointer field verified by this test.

MIP_periodicity_error : In the case of a periodic MIP insertion, the pointer value shall remain constant, as well as the number of packets between each MIP.

MIP_ts_rate_error : In a SFN network the modulator settings are transmitted by the tps_mip. These settings determine the transmission mode and in this way the bit rate of the Transport Stream. This test verifies that the actual Transport Stream data rate is consistent with the DVB-T mode defined by the tps_mip.

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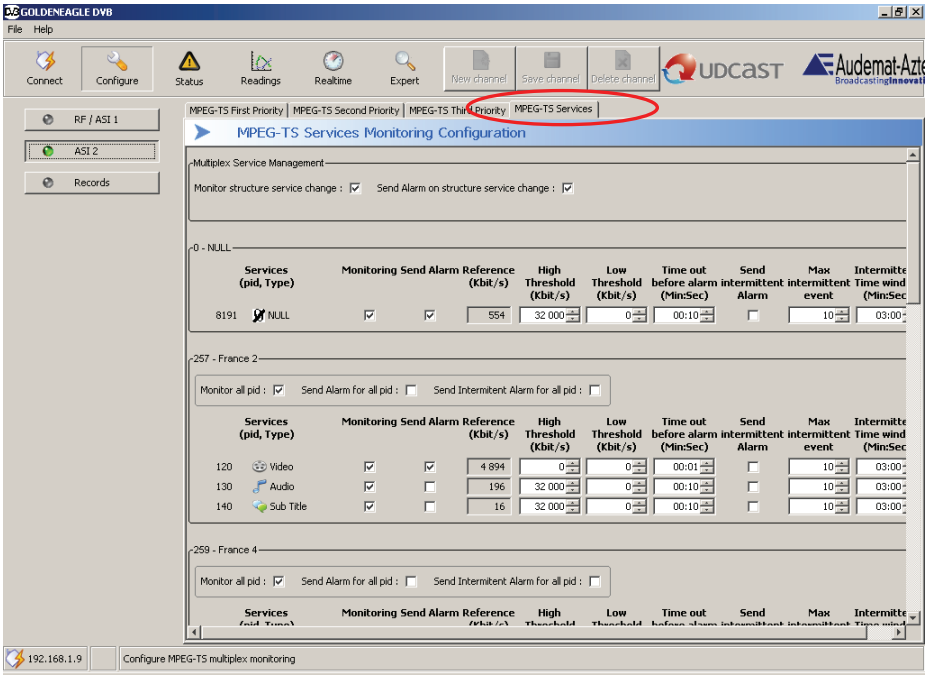
5.2.3.2.5 MPEG-TS Services



The monitoring is done by capturing a 'snapshot' of the service at a given moment.
This capture then becomes the reference for the comparison with future captures.
Two processes are performed with each new capture:

1) Comparison with the reference service structure. The unit can detect :

   - The change of information for a particular program. (Provider name, service Name, running state…)
   - The disappearance of a PID.
   - The emergence of a new PID.

   The user can decide whether or not to monitor these changes and to send an optional alarm. The triggering of the alarm is immediate.

2) The streams associated with each PID are analyzed, 2 types of alarms are available: one high threshold and one low threshold. The time window of the analysis can be defined and the user can configure a periodic alarm analysis similar to those applied to other monitoring.

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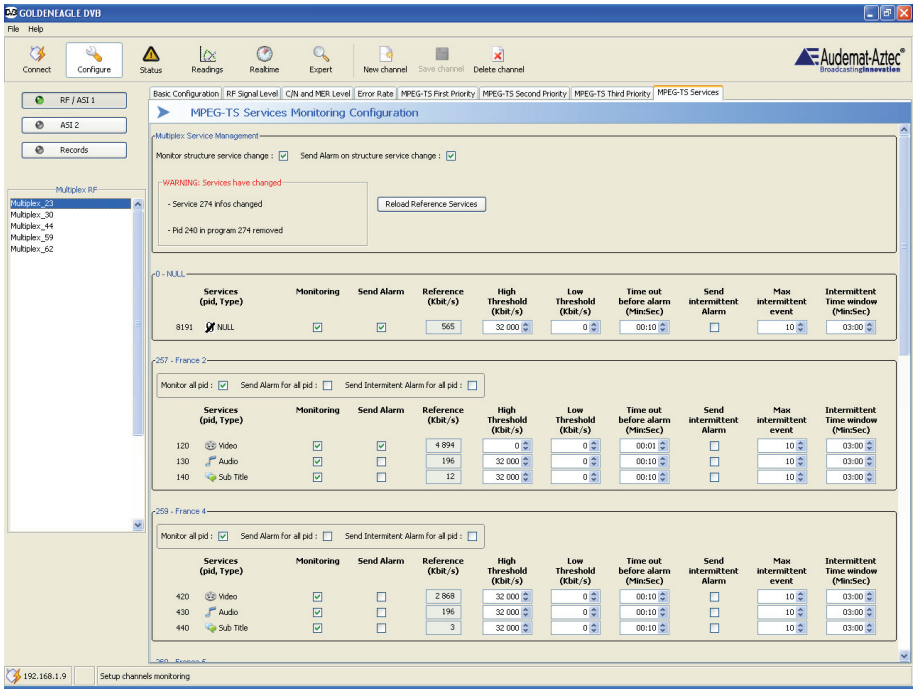
For example, when the user displays the configuration page where the service structure is different from the reference, the list of changes is displayed.



The user can decide to keep the original reference structure or update to the new structure by clicking the “update" button provided for that purpose.

The structure changes can occur as a result of regional switch-overs, scrambled/clear sequences, etc.

The user must keep in mind that the reference capture has a large influence on the alarms which are going to be generated.
For example: if the capture is done when there is a regional switch-over, alarms will occur when the national sequence is operating. Conversely, if the capture is done when the national channel is active, the alarms will trigger when the regional sequence is enabled.

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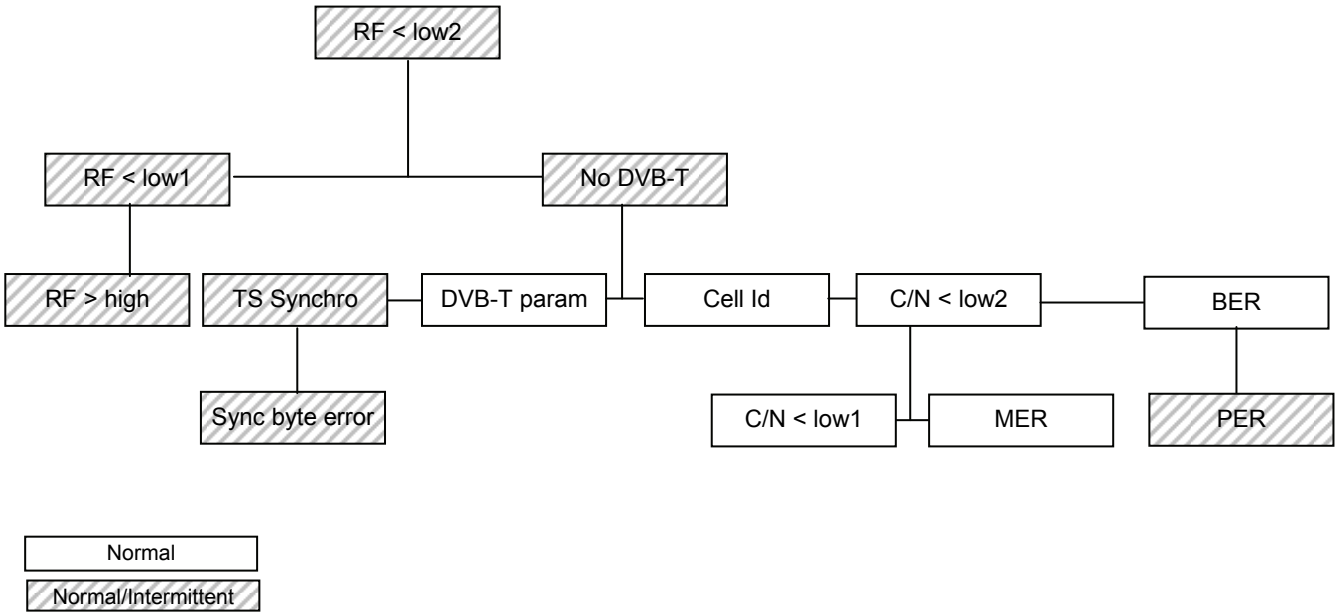
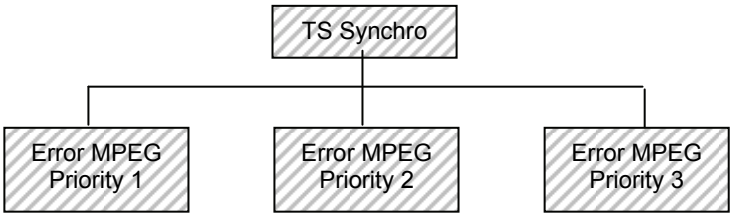
5.2.3.3 *Alarm hierarchy*

- **RF version**



- **ASI version**



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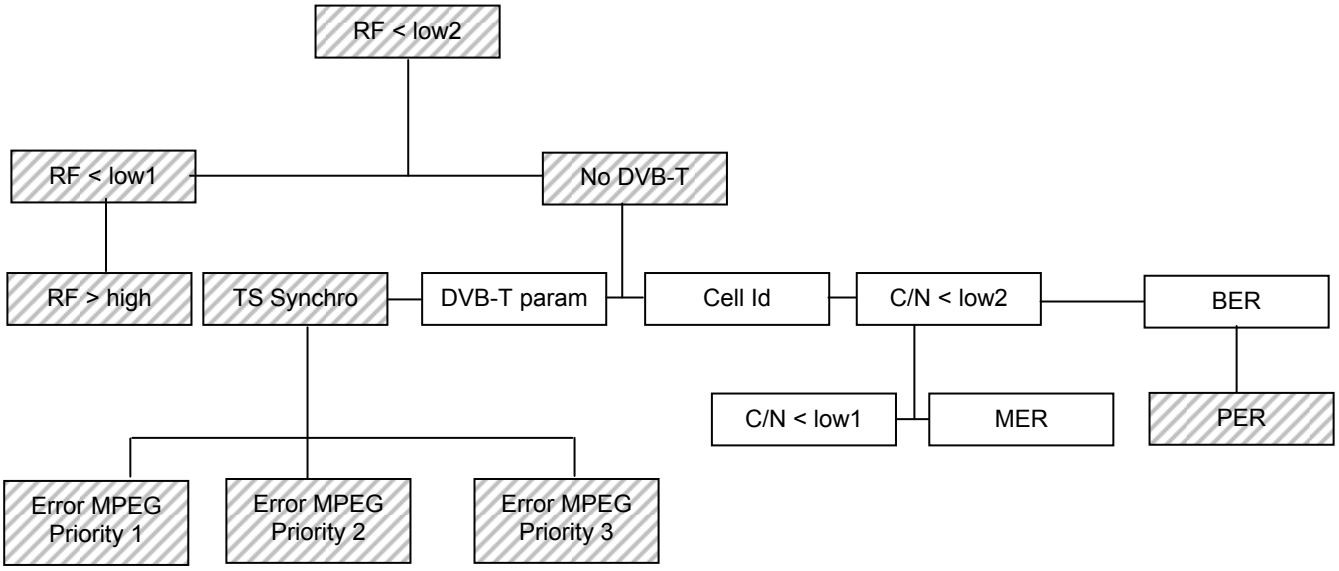
- **ASI+RF version coupled mode**



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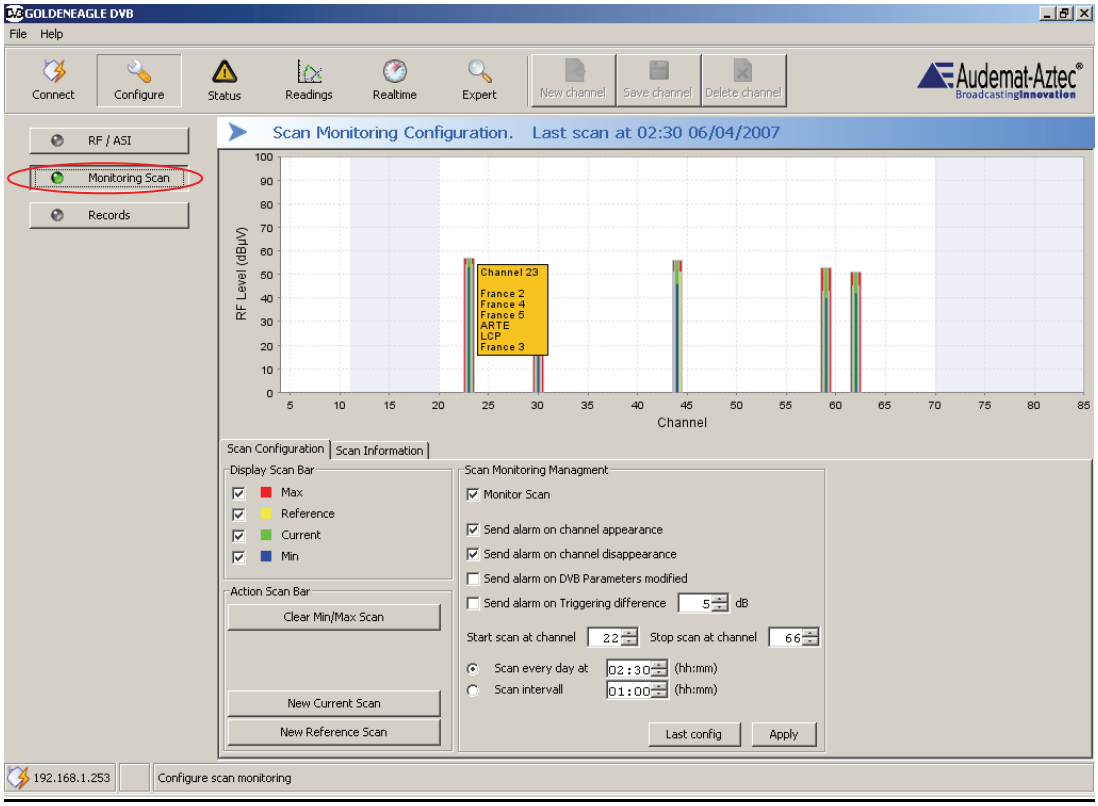
5.2.3.4 "Monitoring Scan" button



Monitoring works from 2 types of scan:

- 1 reference scan over the entire band
- 1 current scan which can be taken on part of the band. This scan maintains min and max values from values taken during various scans.

Monitoring compares the reference scan with the current one and sends four types of alarms:

-"send alarm on channel appearance": an appearing channel alarm with its number and possibly the list of associated programs (the software will carry out a TS analysis for any newly detected channel).

-"send alarm on channel disappearance": a disappearing channel alarm with its number

- "send alarm on DVB parameters modified": a changing feature alarm for an existing channel.

-"send alarm on Triggering difference x dB": an alarm should the current level be outside a configurable range (reference level +/- an offset in dB).

The alarms are delivered as information for each difference encountered during the scan. There is, therefore, no alarm beginning or end, but information is sent again each time difference is encountered during a scan.

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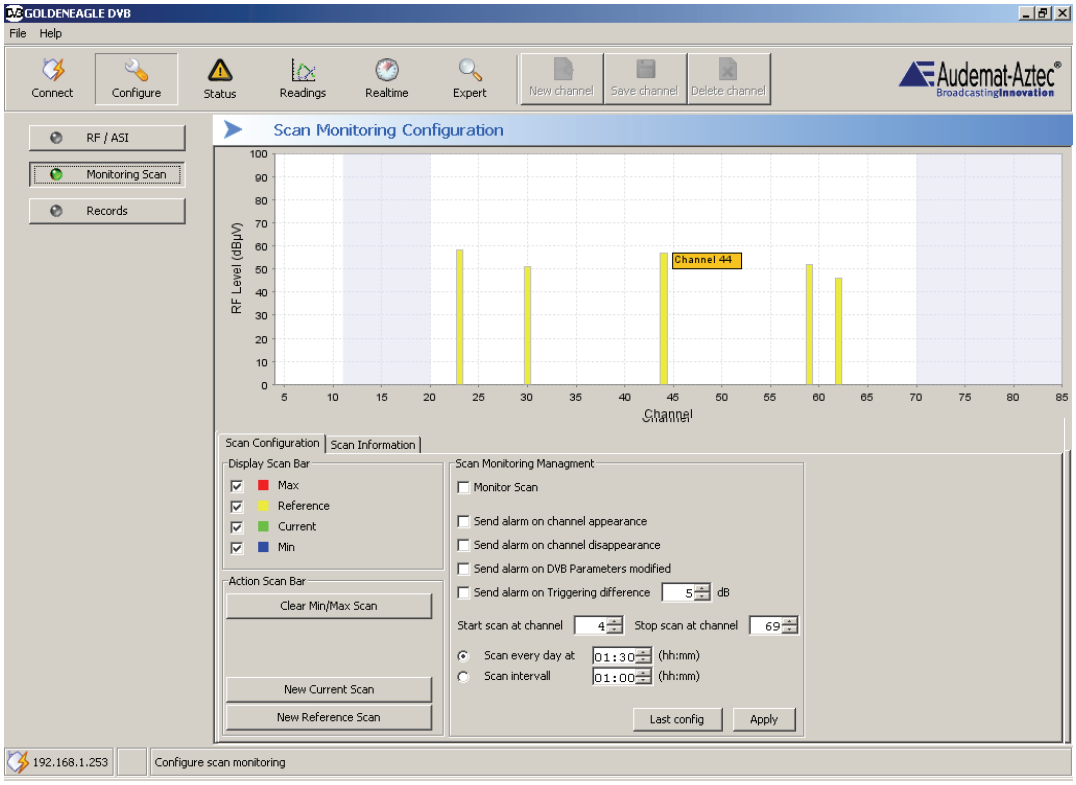
5.2.3.4.1 Scan configuration



*** Display Scan Bar**

This function allows the user to select the bargraph to display:

- Maximum scan
- Reference scan
- Current scan
- Minimum scan

A zoom function is available on the abscissa axis to accommodate the potentially high number of channels.To activate it, select the area to vizualise (by clicking on the mouse); to deselect the zoom, right click on the mouse.

*** Action Scan Bar**

- "Clear Min/Max Scan": min and max values are reinitialized by pressing this button.

- "New current Scan": this button enables a new current scan to be generated.

- "New reference Scan": this button enables a reference scan to be generated.

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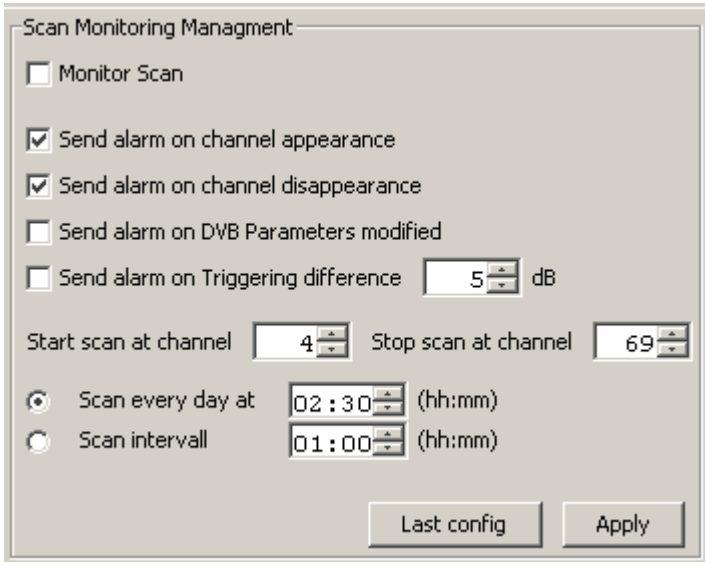
*** Scan Monitoring Management**



The following can be configured on this page:

- activating scan monitoring (single event if an alarm has not been activated)
- activating the alarm when a channel appears
- activating the alarm when a channel disappears
- activating the alarm when DVB parameters modification has been detected
- the offset value triggering off the alarm detecting level variation (+/- this value in dB compared with the reference level)
- activating the alarm when a change in channel features has been detected
- scan range (beginning and end)
- selecting time or interval for scan process
- interval or time of scan processes

Click on "apply" to confirm the new parameters.

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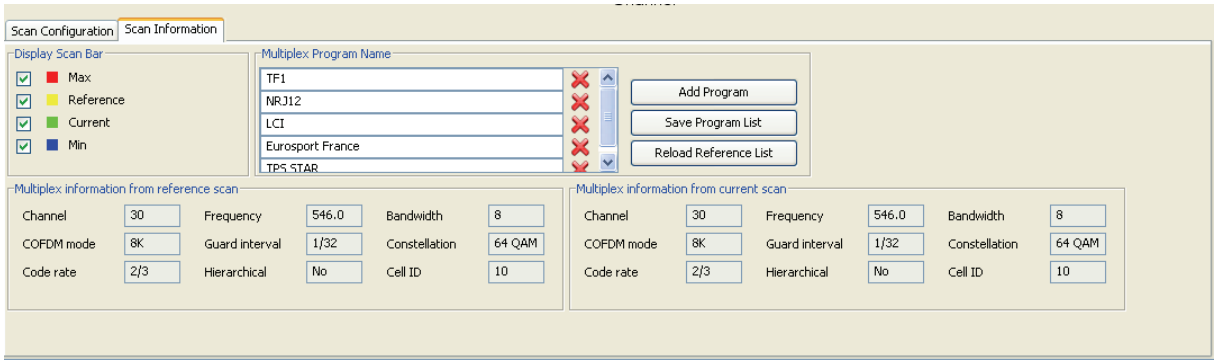
5.2.3.4.2 Scan information



Current and reference scan features appear when clicking on one of the channels.
A modifiable program list also appears with buttons for adding, saving and reinitializing with original values.
The modifiable program list is associated with the reference scan and only appears if the user clicks on a channel appearing in the current scan and not in the reference scan (pirate appearance).
However if the new channel's SDT is correct, the program names will appear when pointing on the channel on the graph.

Note: Scan monitoring is only possible on the first input, even if the device has a double RF input.

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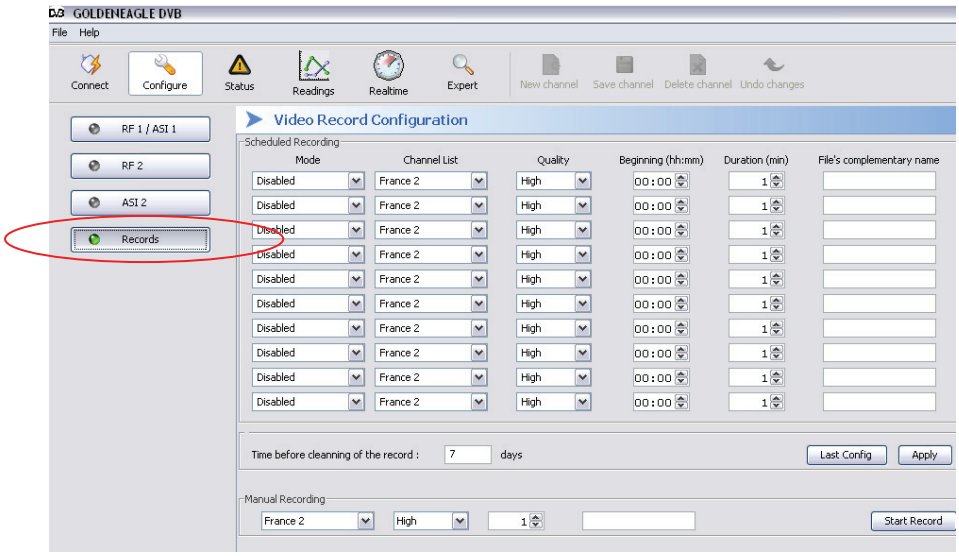
5.2.3.5 "Records" button

***Note**: this functionality is not available in 4k mode.*



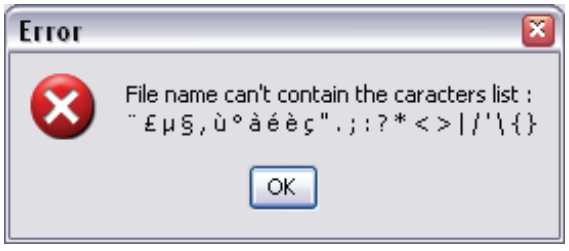
This menu allows the following functionalities:

- planning of 10 daily recordings
- definition of the recording quality
- launching of a manual recording (‘manual recording”).

Three files are automatically created when a record is taken: one video file (.avi), one picture file (.jpg), one text file (.txt).
The format of the name of the video/picture/text files is as follows:

R_YYYYMMDD_HHMMSS_CCC_SSSS_Commentaire.avi
R: Resolution
L: low resolution (400 Kbit/s)
M: medium resolution (800Kbit/s)
H: high resolution (2Mbit/s)
YYYYMMDD: Date of the beginning of recording (year, month, day)
HHMMSS: Time of the beginning of recording (hour, minutes, seconds)
CCC: Channel number (program ID)
SSSS: Channel name
Comment: Name of the Multiplex or text written by the user

Note:
The following caracters are forbidden in the “comment” field:



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↳ Uploading recording via FTP :

Video/picture/text recordings can be uploaded onto a computer by using an FTP customer (File Transfer Protocol), software not supplied by AUDEMAT-AZTEC.

FTP software needs at least the following information:
- IP address of the GOLDENEAGLE DVB-T/H
- User name: record (**lower case characters have to be respected**)
- Password: RReeccoorrdd (**Capital and lower cases have to be respected**)

Video recording AVI files are located in the **ftp/records/YYYYMMDD** sub-directory and are also classed according to date.

Files can then be uploaded onto PC to be viewed using appropriate software.

Note:

Storage capacity of the hard disk is 35 Go or 65 Go depending on the model. With a 24 Mbit/s rate, that means:

- In "High" mode: capacity around 12h
- In "Medium" mode: capacity around 60h
- In "Low" mode: capacity around 120h

Example: 60 minutes of recording in"high quality"mode correspond to:
- "High": 2.7 Go
- "Medium": 540 Mo
- "Low": 270 Mo

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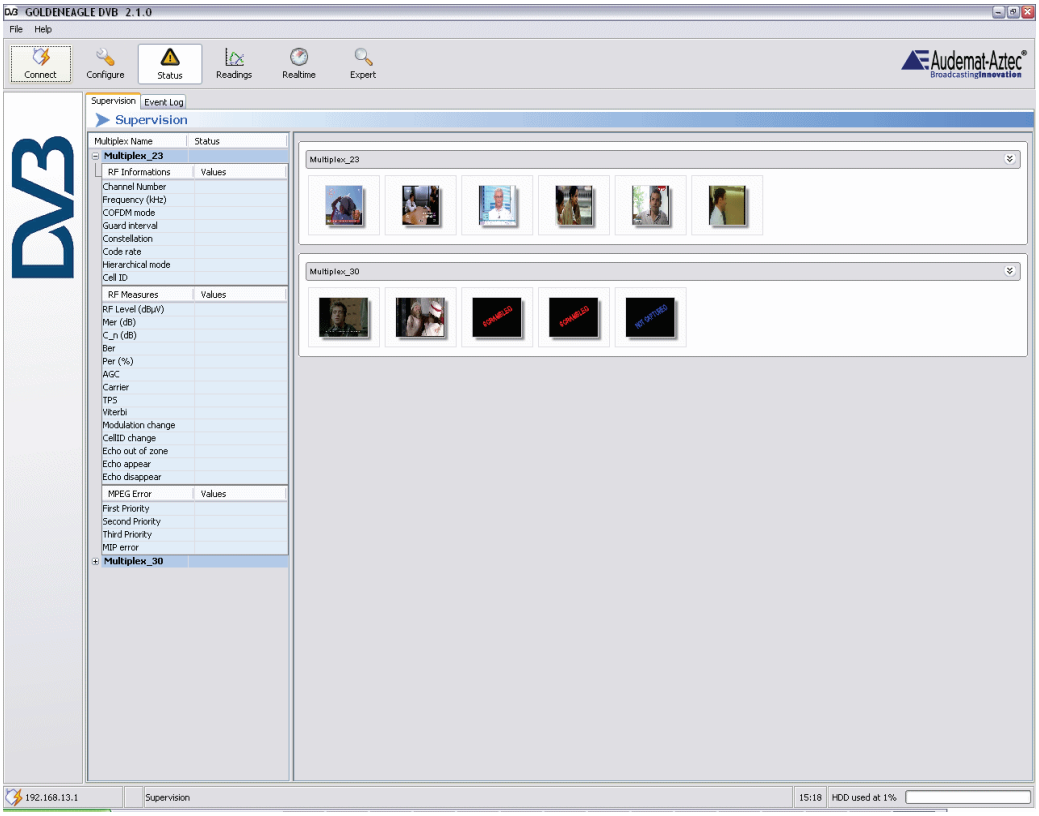
5.3. "Status" tab

5.3.1. Supervision

This tab displays the status of the channels being monitored and the values monitored.
The user can also see a snapshot of each PID video carried in each multiplex

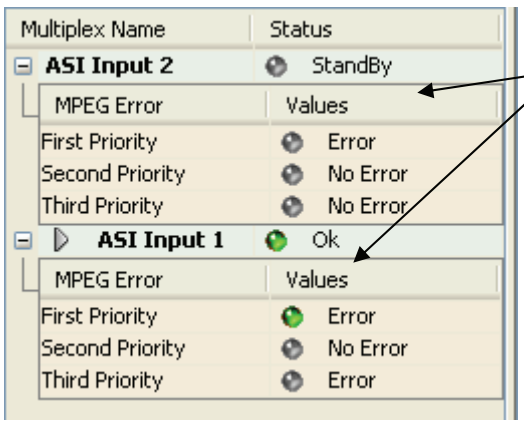
These two functions are not linked (via "refresh", etc.) because the information is coming from two different receivers.

The list of available multiplexes is coming from the monitored channels list. All information will be refreshed following the monitoring pace.



The screen is divided in two parts:

On the left side:
For each multiplex or ASI input a list of parameters with their status is available (see below):



Four colors can be displayed:

- Value or multiplex not monitored
- Value or multiplex monitored and OK
- Value or multiplex monitored with error but without alarm
- Value or multiplex monitored with alarm

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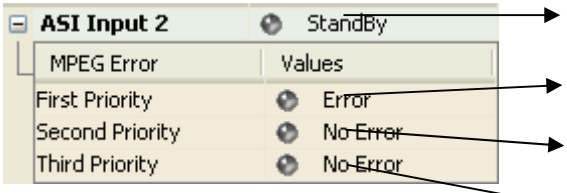
Example: if ASI input monitoring is activated as follows:

In this case if a "TS Sync Lost" error occurs, the "First priority" indicator will turn yellow for 10 seconds and become red, indicating the alarm is in progress.

⇨ For the ASI channel:



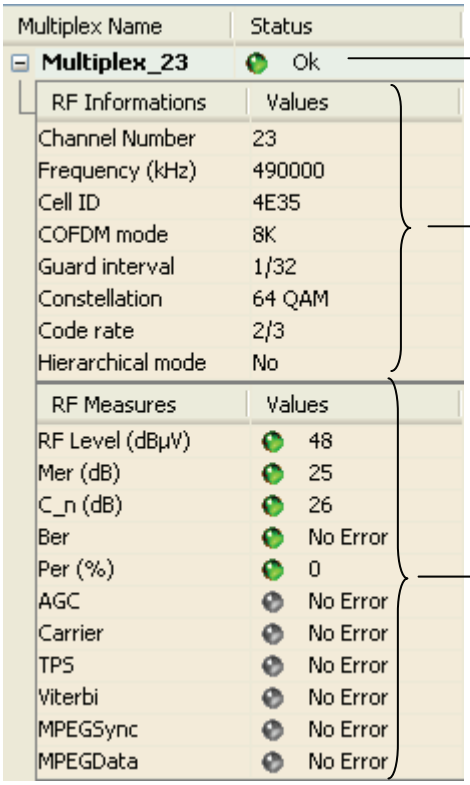
Status of the channel

Status of the parameters of the ETR 290101 First

Status of the parameters of the ETR 290101 Second priority

Status of the parameters of the ETR 290101 Third priority

⇨ For RF Multiplex :



Status of multiplex

RF parameters with their values

RF parameters with
- values
- status : ok, error or alarm

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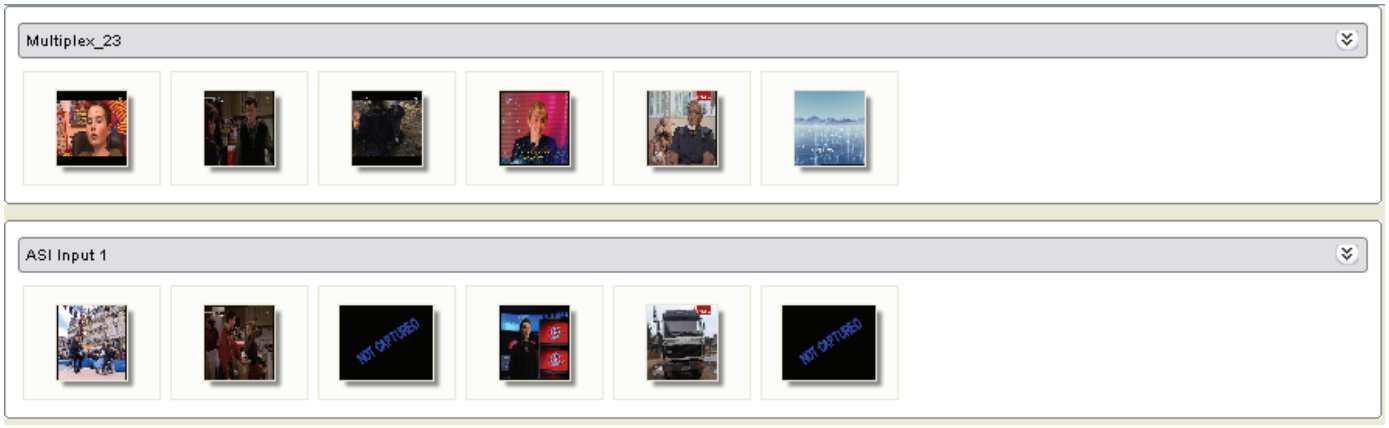
On the right side: user will find a snapshot of channels of each multiplex. These snapshots are updated approximatively once per second.

***Note**: this functionality is not available in 4k mode.*



If the user clicks on " ", a bigger snapshot will be displayed:

For each snapshot, the following informations is given:

* Program name
* Program ID
* PID Video
* PID Audio

Each snapshot is time stamped.

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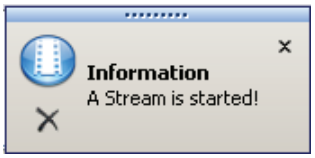
Notes:

1- If the channel is scrambled, the following screen is displayed:

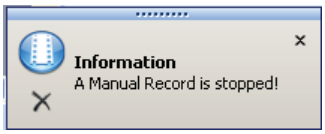
2- If the capture is not possible, the following screen is displayed:

3- If the user double-clicks on one of the “channel”, video/audio streaming is automatically launched.

4- If another user launches a streaming or a recording then the following “pop-up" will appear:



And when it is over:



5- Time is displayed in the bottom right hand corner of the screen: it is not local time, but time for the monitored piece of equipment. It becomes therefore easier to manage recording programming in different time zones.

6- There is also a status bar showing how much space is available on the equipement hard drive (“HDD used at n%”). If not enough space is available for new recordings, older recordings will be deleted automatically. This bar allows the user to anticipate as he/she views when it becomes necessary to back up older data in order to free space.

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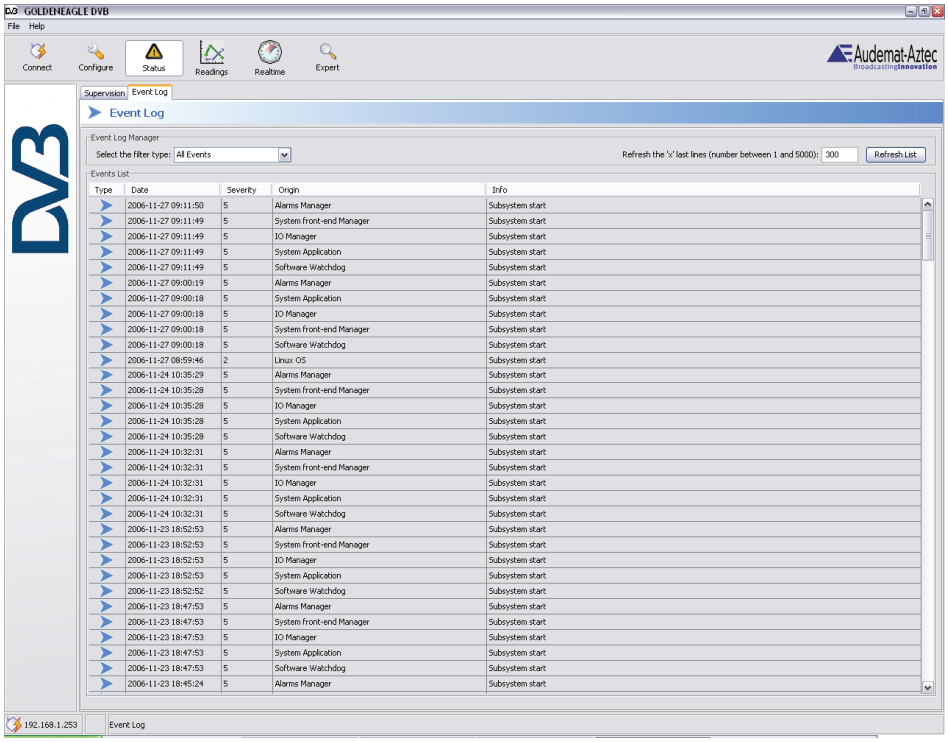
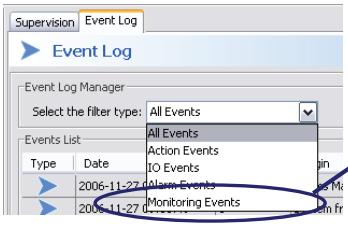
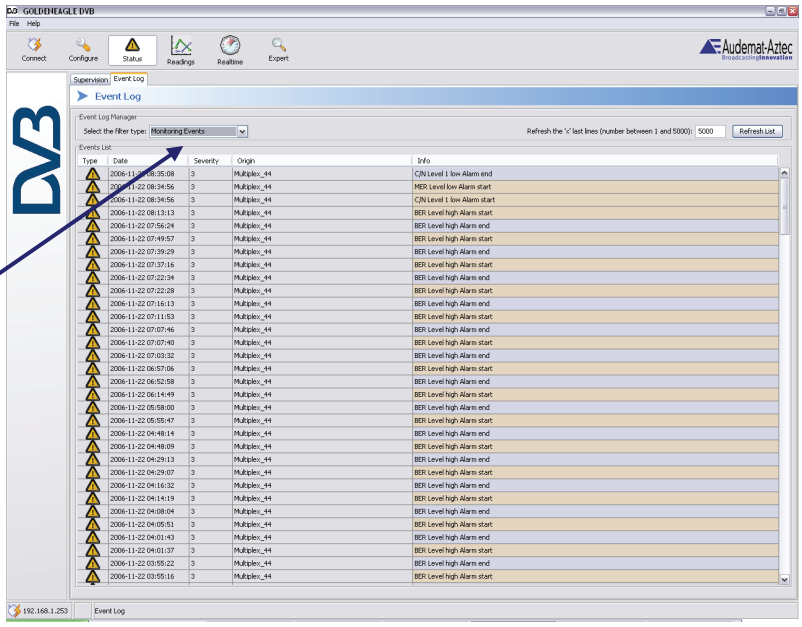
5.3.2. Event log

This tab gives all the current alarms with details.
The “event log manager" enables the user to do a filter on the events he wants to display (see example below).







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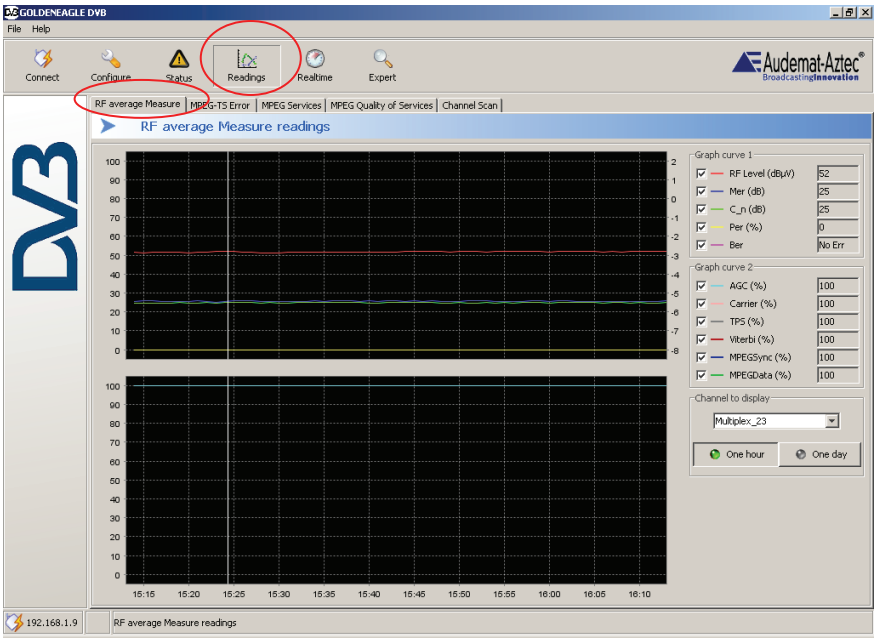
5.4. Tab readings

5.4.1. RF average Measure readings

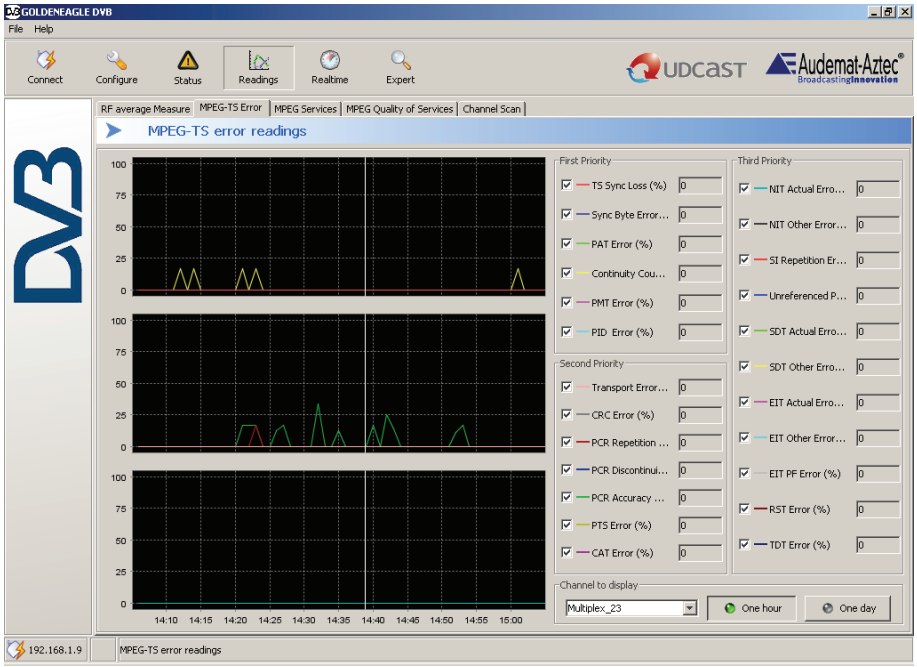
Displays reading of RF Measurement either for one hour or one day.



Note : a cursor allows to read specific values as it travels along the curve

5.4.2. MPEG-TS Error

Displays MPEG-TS error readings either for one hour or one day.



Note : a cursor allows to read specific values as it travels along the curve

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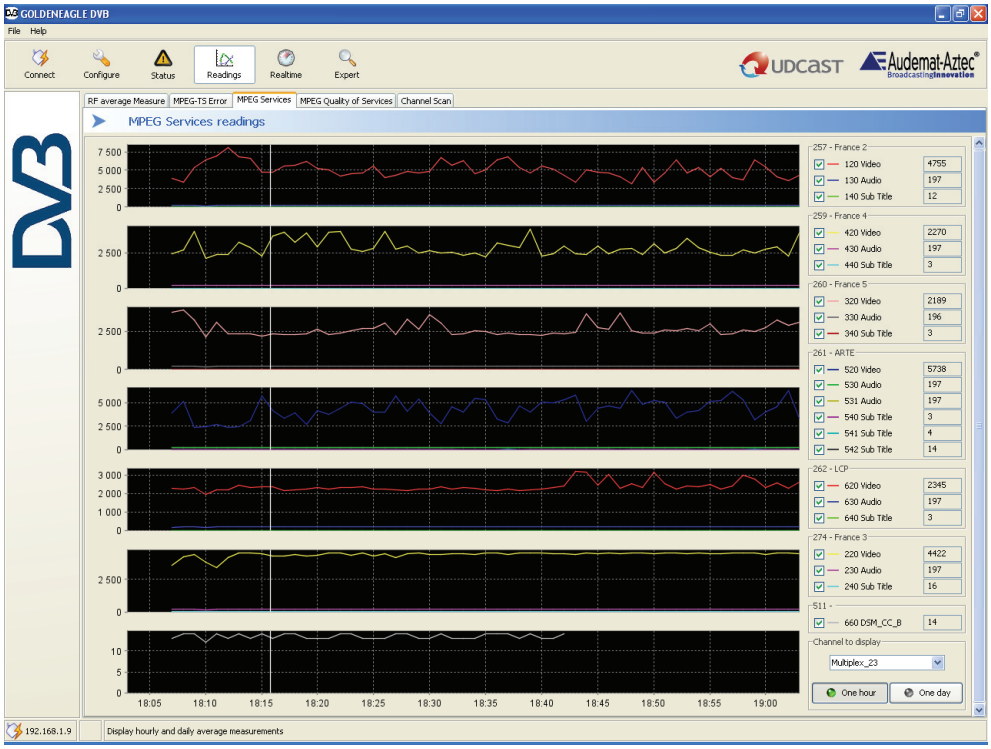
5.4.3. MPEG Services



The GoldenEagle DVB records every stream on every PID detected in the multiplex. Only the reference service streams are displayed on the averaged values page.

Be carefull: if at any moment, a PID cannot be present any, there will be no associated measurement.

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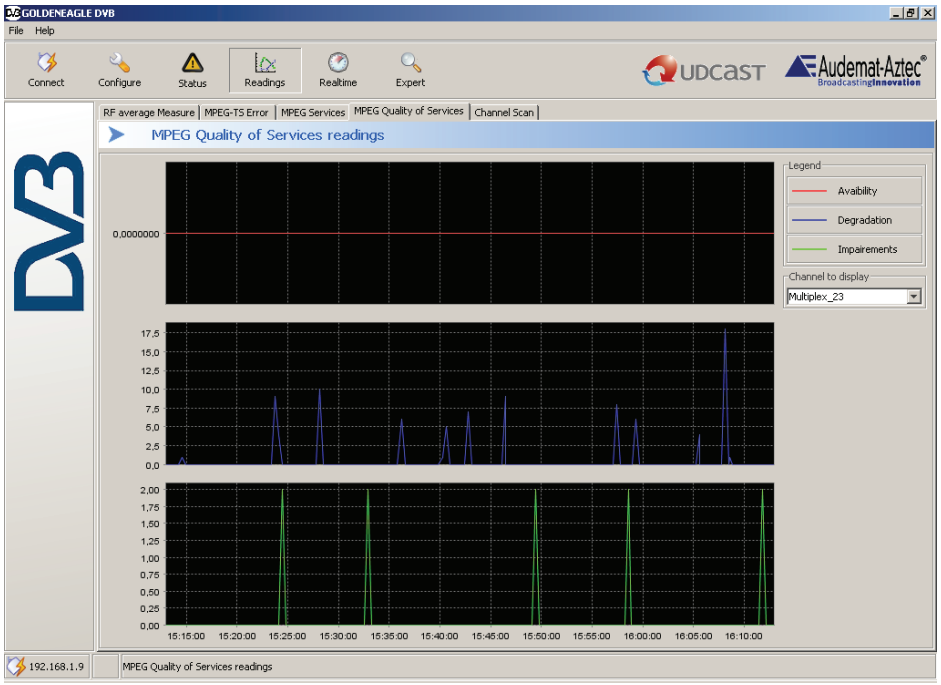
5.4.4. MPEG Quality of service



Three values enable a transmission state to be given (in terms of quality) by combining other values. These values can be used as a base for a contract between operators and content supplier.

- **Availability Error:** calculation on TS_sync_lost + PAT error + PMT error

Service availability error = Max [TS_sync_loss (deltaT), PAT error (deltaT), PMT_error ((deltaT)]

- **Degradation:** calculation on CRC, PRC, NIT, SDT

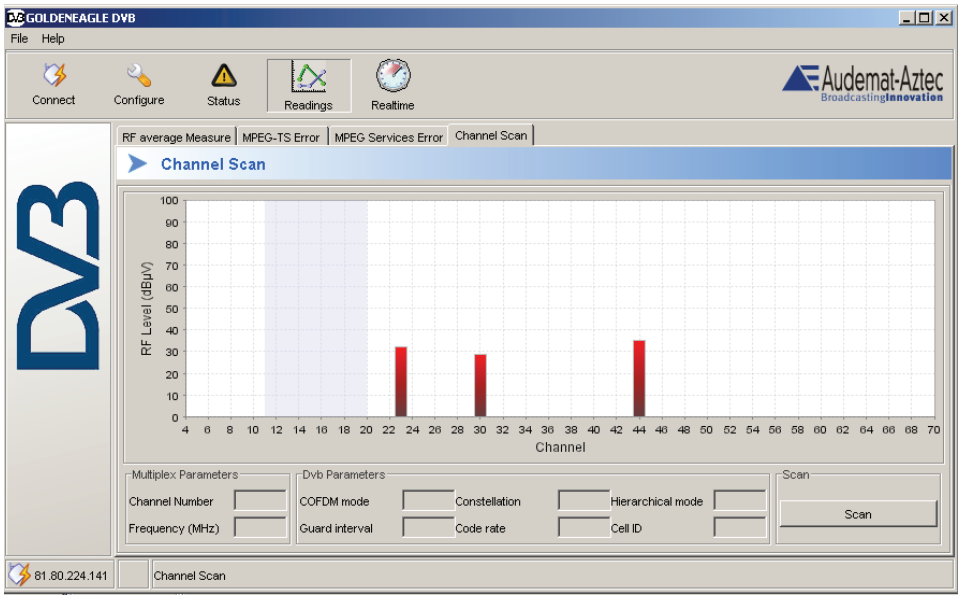
Service degradation error = Max [CRC_error(Δt),PCR_error(Δt),NIT_error(Δt),SDT_error(Δt)]

- **Impairements:** calculation on Continuity_count_error et Transport_error

Service Impairements error = Max [Continuity_count_error,Transport_error]

Note: in agreement with the TS 290 101 norm.

5.4.5. Channel Scan: overview of the channel "on air".



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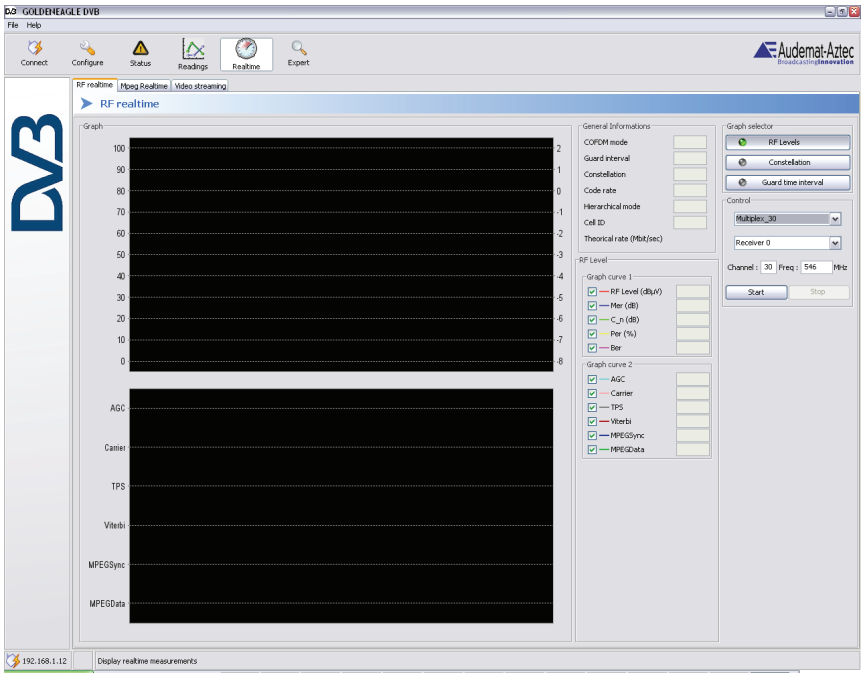
5.5. Tab Realtime

Before beginning:

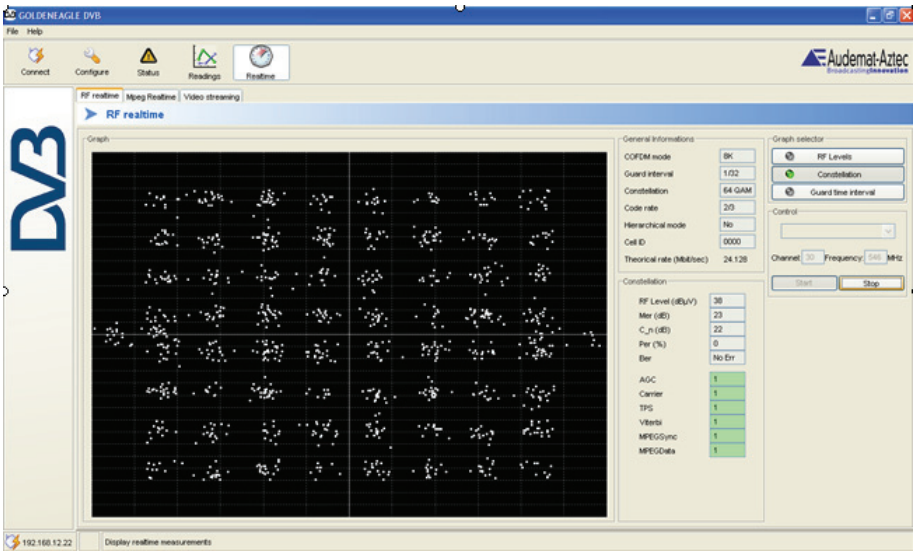
If the user does not stop "real time" functions, functions "RF Realtime" and "MPEG Realtime" will stop automatically after 4 hours.

5.5.1. RF Realtime



First select the channels you would like to analyze. The following information is available:

- BER, MER, PER, C/N, level, graphically and by value (RF Basic).
- Constellation: its form indicates errors, position of the pilot "carriers" and useful carriers (RF Full)



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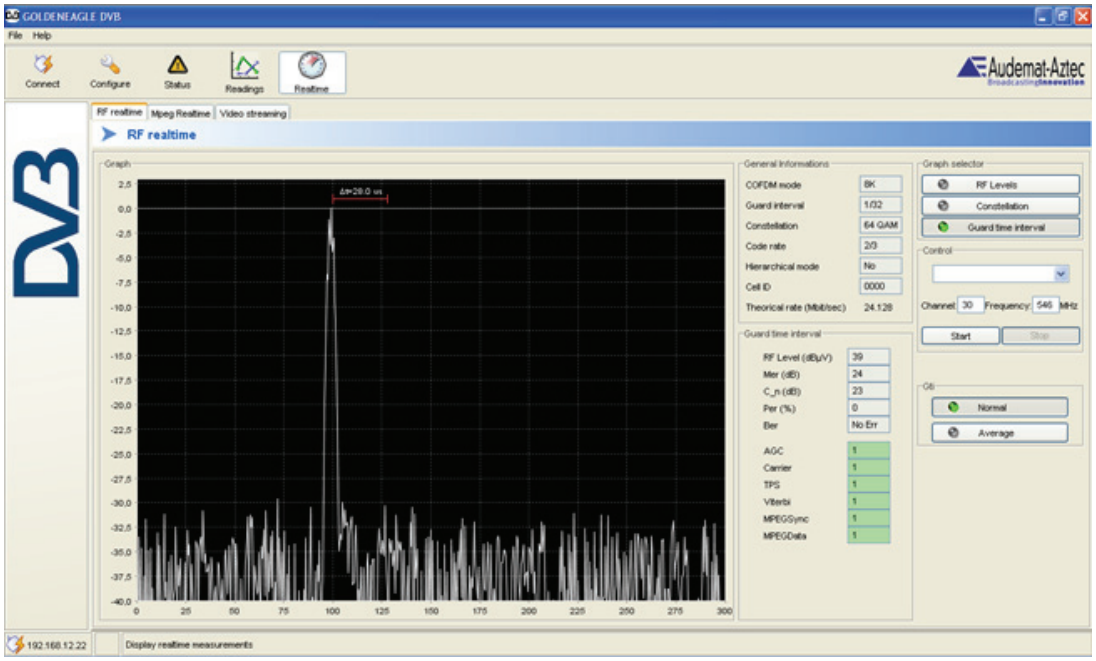
- Impulse response (Full RF Option)

- guard interval automatically calculated according to the modulation
- dynamic amplitude: 30dB
- time window: time of a COFDM /3 symbol

Calculation is done according to the mode (2, 4 or 8K), the guard interval and the code rate.



Performance indicators of the guard interval:

Frequency Domain Parameters		8K mode	4K mode	2K mode
Number of carriers	K	6817	3409	1705
Value of carrier number	Kmin	0	0	0
Value of carrier number	Kmax	6816	3408	1704
Elementary period	T	7/64	7/64	7/64
Duration	Tu	896 µs	448 µs	224 µs
Carrier Spacing	1/Tu	*1 116 Hz*	*2 232 Hz*	*4 464 Hz*
Spacing between carriers Kmin a	(K-1)/Tu	*7,61 MHz*	*7,61 MHz*	*7,61 MHz*

Time Domain Parameters		8K mode				4K mode				2K mode			
Useful symbol Part	Tu	8192T 896 µs				4096T 448 µs				2048T 224 µs			
Guard Interval Part	Δ/Tu	1/4	1/8	1/16	1/32	1/4	1/8	1/16	1/32	1/4	1/8	1/16	1/32
Guard Interval Duration	Tg	2 048T 224 µs	1 024T 112 µs	512T 56 µs	256T 28 µs	1 024T 112 µs	512T 56 µs	256T 28 µs	128T 14 µs	512T 56 µs	256T 28 µs	128T 14 µs	64T 7 µs
Total Symbol Duration	Ts = Δ + Tu	10 240T 1120 µs	9 216T 1008 µs	8 704T 952 µs	8 448T 924 µs	5 120T 560 µs	4 608T 504 µs	4 352T 476 µs	4 224T 462 µs	2 560T 280 µs	2 304T 252 µs	2 176T 238 µs	2 112T 231 µs

Note: Beginning of guard interval is always positioned according to the "strongest echo" method.

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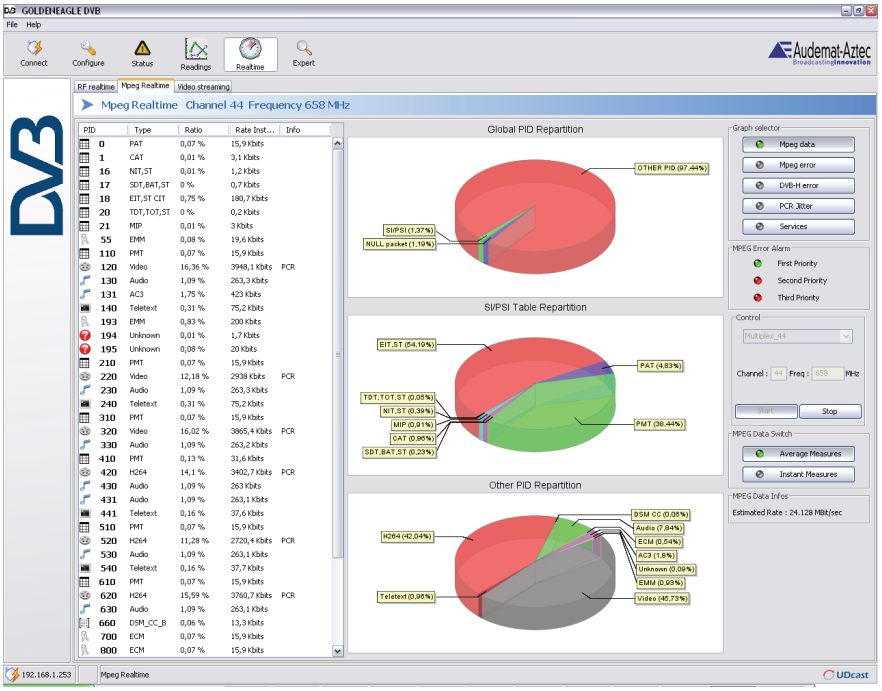
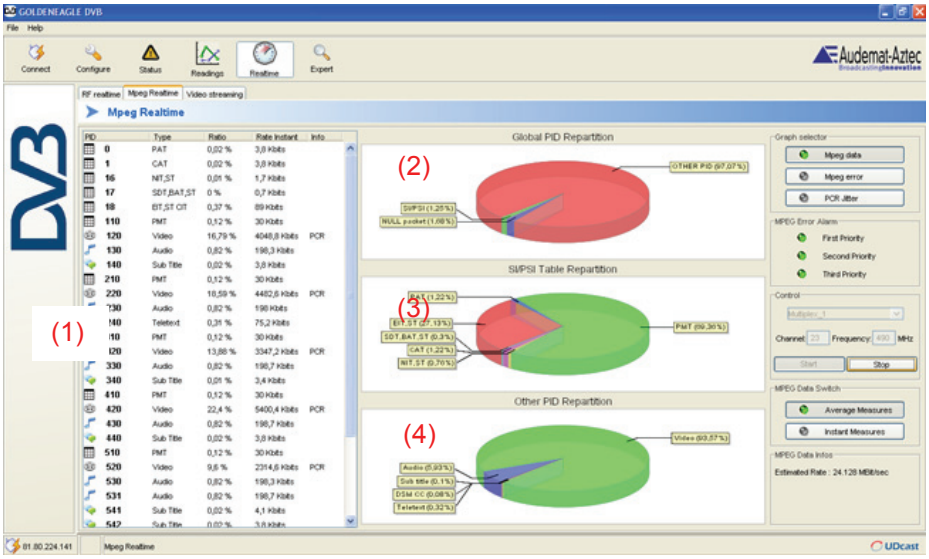
5.5.2. MPEG Realtime



This tab allows seeing in real time different MPEG-TS information:

5.5.2.1 MPEG data



4 representations:

(1). List of PIDs with: ID, type, ratio, rate instant, information
(2). Global PID repartition representation: SI/PSI, null packet and other PID
(3). SI/PSI table repartition representation
(4). Other PID repartition representation

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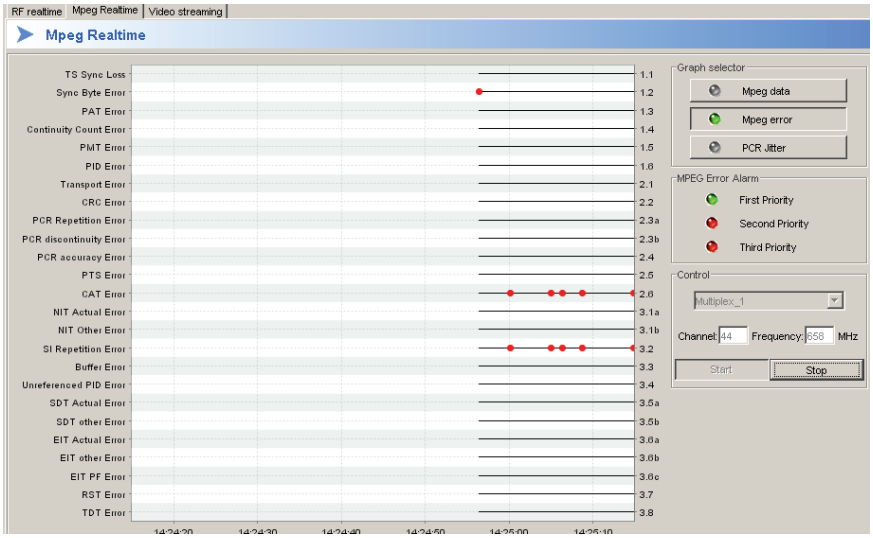
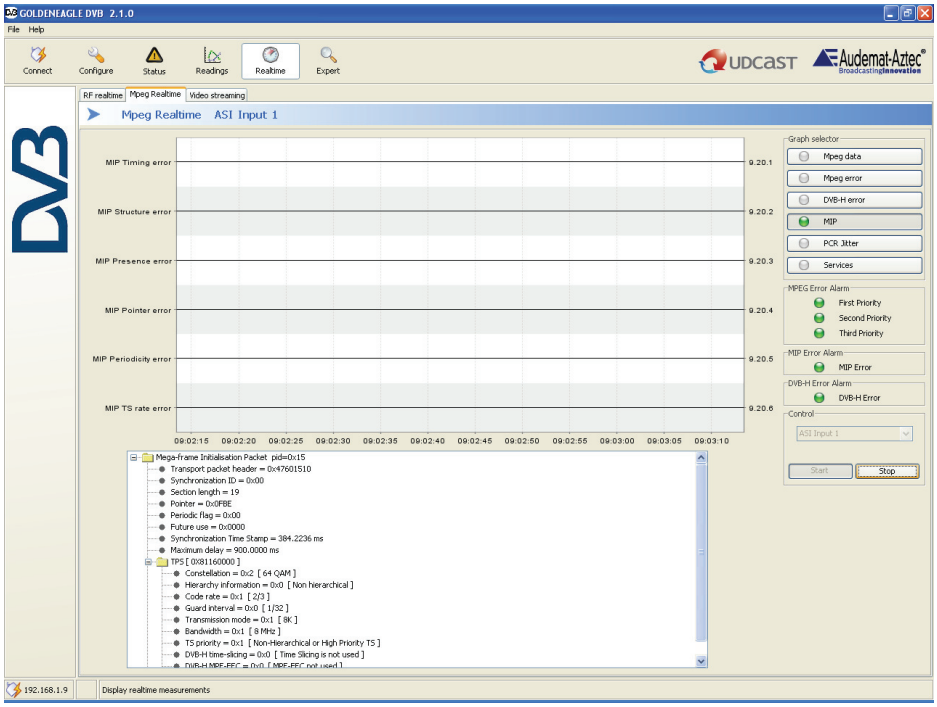
5.5.2.2 MPEG error



This screen displays TS errors. A red dot appears in case there is at least one error within the last second.
It does not give any indication regarding the number of errors.

Note: errors triggering thresholds used are those defined by ETR290101.

5.5.2.3 MIP information and errors



Based on the same principle as previously described (see section 5.2.3.2.4), the screen displays MIP errors.

The content of the MIP table is displayed in a tree form.

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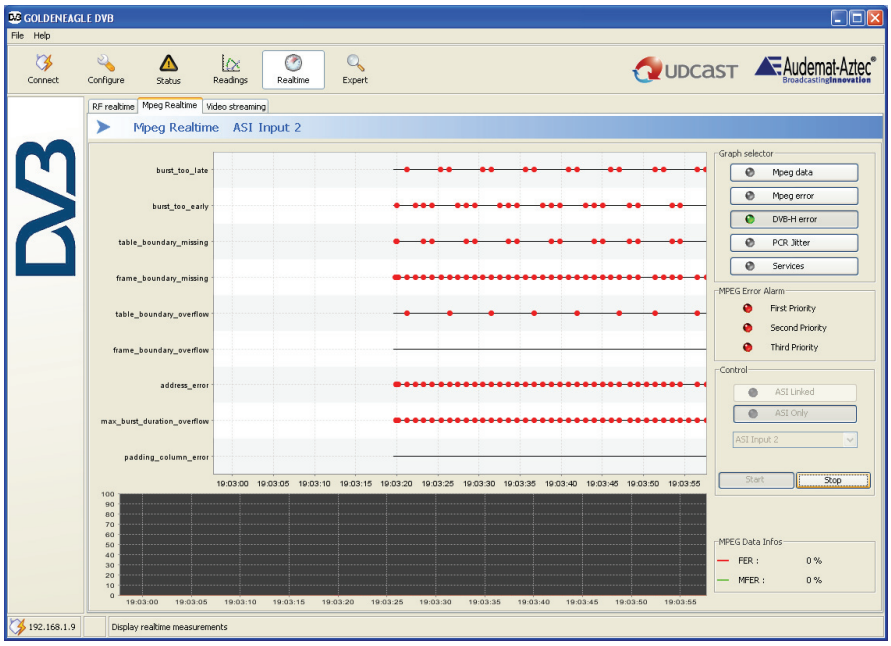
5.5.2.4 DVB-H error



The interface displays the following errors:

- **burst_too_late:** When a burst arrives too late. As the system is already on, no data should be lost. However this may increase the power consumption on the receiver.
- **burst_too_early:** When a burst arrives too early. This error is very important as it means the system will be switched on too late, so parts of the next burst will be missing.
- **table_boundary_missing:** If we notice that the system has finished sending its MPE sections and now transmits MPE-FEC sections although we didn't see the associated signaling.
- **frame_boundary_missing:** If we notice that we have received all the needed MPE-FEC sections and the system didn't inform correctly of the end of these sections using the associated signaling.
- **table_boundary_overflow:** If we receive a signaling information which announce the end of a table, and that we notice that we still miss some information.
- **frame_boundary_overflow:** If we receive a signaling information which announce the end of a frame, and that we notice that we still miss some information.
- **address_error:** During the reconstruction of the MPE-FEC frame, each individual block has its own address. We can detect if this information is not coherent with previous collected data.
- **max_burst_duration_overflow:** A burst must not take too much time in the air. If a burst duration is too long, this will be reported.
- **padding_column_error:** Check the coherence of padding with header information.

In lower part the interface display FER and MFER evolution:

- **FER** (Frame Error Ratio) is the ratio of Application Data Table containing errors, without MPE-FEC error correction being applied during an observation period.
- **MFER** (MPE FER) is the ratio of uncorrected MPE-FEC frames during an observation period.

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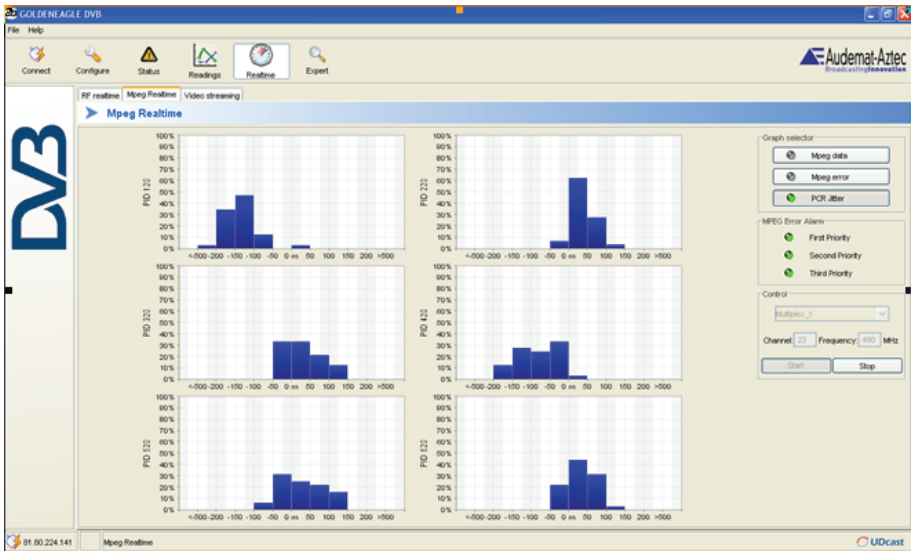
5.5.2.5 PCR Jitter



Each jitter is displaying its percentage repartition of the time value of the PCR. If this value is > 500 ns, the colour becomes red.

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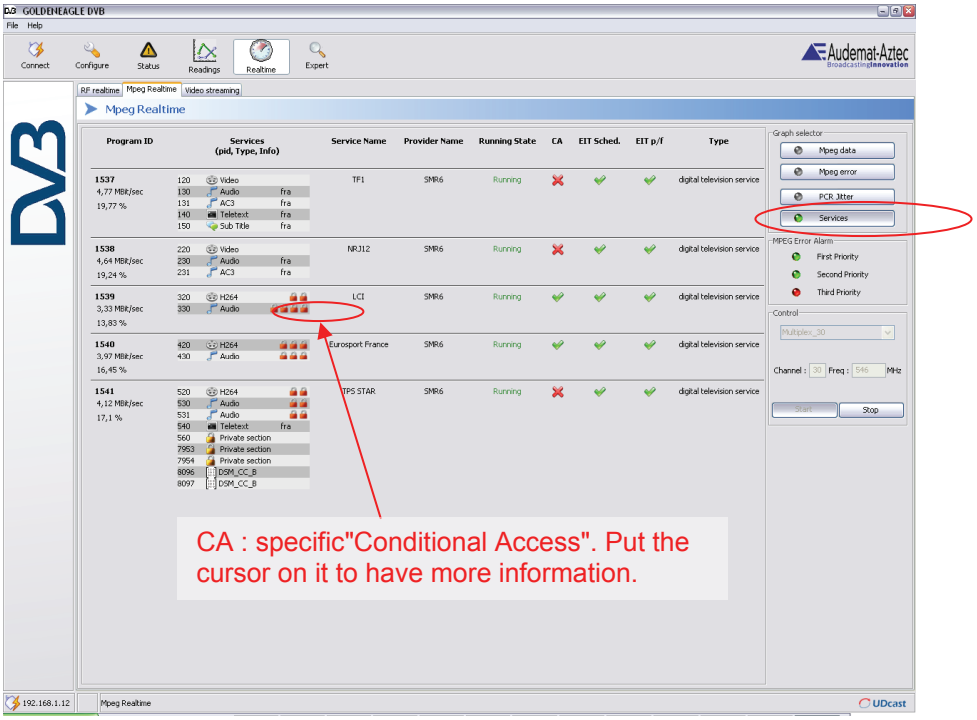
5.5.2.6 Services (MPEG FULL OPTION)



This screen displays multiplex services:

⇨ ID program :

- Identifying number
- Instantaneous flow
- Percentage of the global flow

⇨ Services :

- PID number
- Service type : video, teletext, sub-title, associated metadata ...

Note:

In the case of sub-tittles and audio, language is specified.

Signification of the "padlocks":

- The number of padlocks corresponds to the number of used ECM (Entitlement Control Message). ECM is a function of the control word and the services key (used to decode the control word) are transmitted every 2 seconds.

- 2 bits of information are given when the mouse cursor is over it :
  - PID of the associated ECM
  - CA_system_id (defined in theTR 101 162):

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CA_system_id values	CA system specifier
0x0000	Reserved
0x0001 to 0x00FF	Standardized systems
0x0100 to 0x01FF	Canal Plus
0x0200 to 0x02FF	CCETT
0x0300 to 0x03FF	MSG MediaServices GmbH
0x0400 to 0x04FF	Eurodec
0x0500 to 0x05FF	France Telecom
0x0600 to 0x06FF	Irdeto
0x0700 to 0x07FF	Jerrold/GI/Motorola
0x0800 to 0x08FF	Matra Communication
0x0900 to 0x09FF	News Datacom
0x0A00 to 0x0AFF	Nokia
0x0B00 to 0x0BFF	Norwegian Telekom
0x0C00 to 0x0CFF	NTL
0x0D00 to 0x0DFF	Philips
0x0E00 to 0x0EFF	Scientific Atlanta
0x0F00 to 0x0FFF	Sony
0x1000 to 0x10FF	Tandberg Television
0x1100 to 0x11FF	Thomson
0x1200 to 0x12FF	TV/Com
0x1300 to 0x13FF	HPT - Croatian Post and Telecommunications
0x1400 to 0x14FF	HRT - Croatian Radio and Television
0x1500 to 0x15FF	IBM
0x1600 to 0x16FF	Nera
0x1700 to 0x17FF	BetaTechnik
0x1800 to 0x18FF	Kudelski SA
0x1900 to 0x19FF	Titan Information Systems
0x2000 to 0x20FF	Telefónica Servicios Audiovisuales
0x2100 to 0x21FF	STENTOR (France Telecom, CNES and DGA)
0x2200 to 0x22FF	Tadiran Scopus
0x2300 to 0x23FF	BARCO AS
0x2400 to 0x24FF	StarGuide Digital Networks
0x2500 to 0x25FF	Mentor Data System, Inc.
0x2600 to 0x26FF	European Broadcasting Union
0x4700 to 0x47FF	General Instrument
0x4800 to 0x48FF	Telemann
0x4900 to 0x49FF	Digital TV Industry Alliance of China
0x4A00 to 0x4A0F	Tsinghua TongFang
0x4A10 to 0x4A1F	Easycas

⇨ Service name : name of the TV channel

⇨ Provider name: name of the provider.

⇨ Running state : corresponds to the services state as defined in the EN 300 468 norm:

Value	Meaning
0	undefined
1	not running
2	starts in a few seconds (e.g. for video recording)
3	pausing
4	running
5 to 7	reserved for future use

⇨

⇨ CA (conditional Access):

- Yes: if all services are coded.
- no :
  - either no service is coded
  - or some services are coded (but not continuously), in this case a symbol "padlock" is associated to coded services in the column "services" during coding.

⇨ EIT sched. (EIT Schedule flag): defined in the SDT table (Service description Table) of the norm EN 300 468.

- 1: if programmation information is available for all services of all present multiplex in the current Transport Stream.
- 0: in case it is not

⇨ EIT p/f (EIT_present_following_flag): defined in the SDT table (Service description Table) of the norm EN 300 468.

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- 1: if the information concerning the program in process and the following one are available for the services of the multiplex concerned.
- 0: in case it is not

⇨ Type : corresponds to "service descriptor" defined in the norm EN 300 468 like "Service type coding"

service_type	Description
0x00	reserved for future use
0x01	digital television service (see note 1)
0x02	digital radio sound service (see note 2)
0x03	Teletext service
0x04	NVOD reference service (see note 1)
0x05	NVOD time-shifted service (see note 1)
0x06	mosaic service
0x07	reserved for future use
0x08	reserved for future use
0x09	reserved for future use
0x0A	advanced codec digital radio sound service
0x0B	advanced codec mosaic service
0x0C	data broadcast service
0x0D	reserved for Common Interface Usage (EN 50221 [39])
0x0E	RCS Map (see EN 301 790 [7])
0x0F	RCS FLS (see EN 301 790 [7])
0x10	DVB MHP service
0x11	MPEG-2 HD digital television service
0x12 to 0x15	reserved for future use
0x16	advanced codec SD digital television service
0x17	advanced codec SD NVOD time-shifted service
0x18	advanced codec SD NVOD reference service
0x19	advanced codec HD digital television service
0x1A	advanced codec HD NVOD time-shifted service
0x1B	advanced codec HD NVOD reference service
0x1C to 0x7F	reserved for future use
0x80 to 0xFE	user defined
0xFF	reserved for future use
NOTE 1: MPEG-2 SD material should use this type. NOTE 2: MPEG-1 Layer 2 audio material should use this type.	

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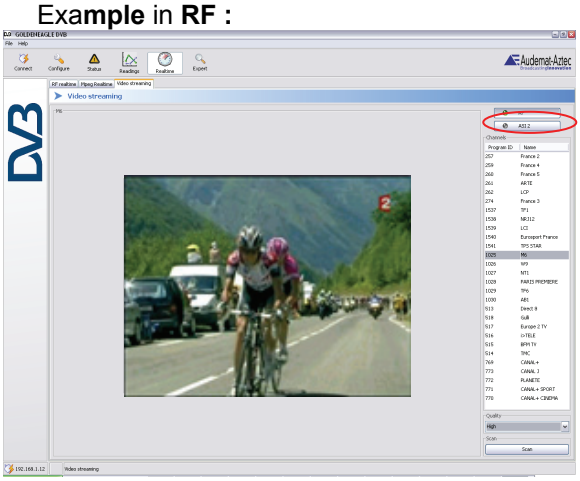
5.5.3. Video Streaming

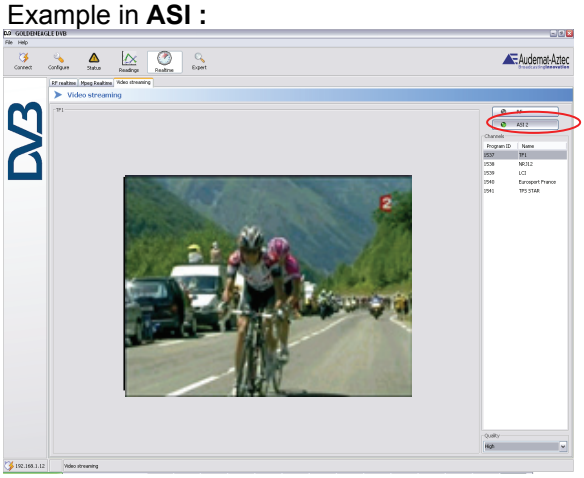
***Note**: this functionality is not available in 4k mode.*

This page allows **visualizing** a multiplex program in streaming. Click on the channel to display the **program** and the selected quality.
Note: channel scan is done automatically by the band scanning.

Example in **RF :**



Example in **ASI :**



In RF: Channel list appears if the user has done a scan in the configuration.
In ASI: The ASI flow has to be in monitoring mode to display the channel list.

Three qualities are possible:

* High: 640*480

* Medium: 320*240

* Low: 192*240

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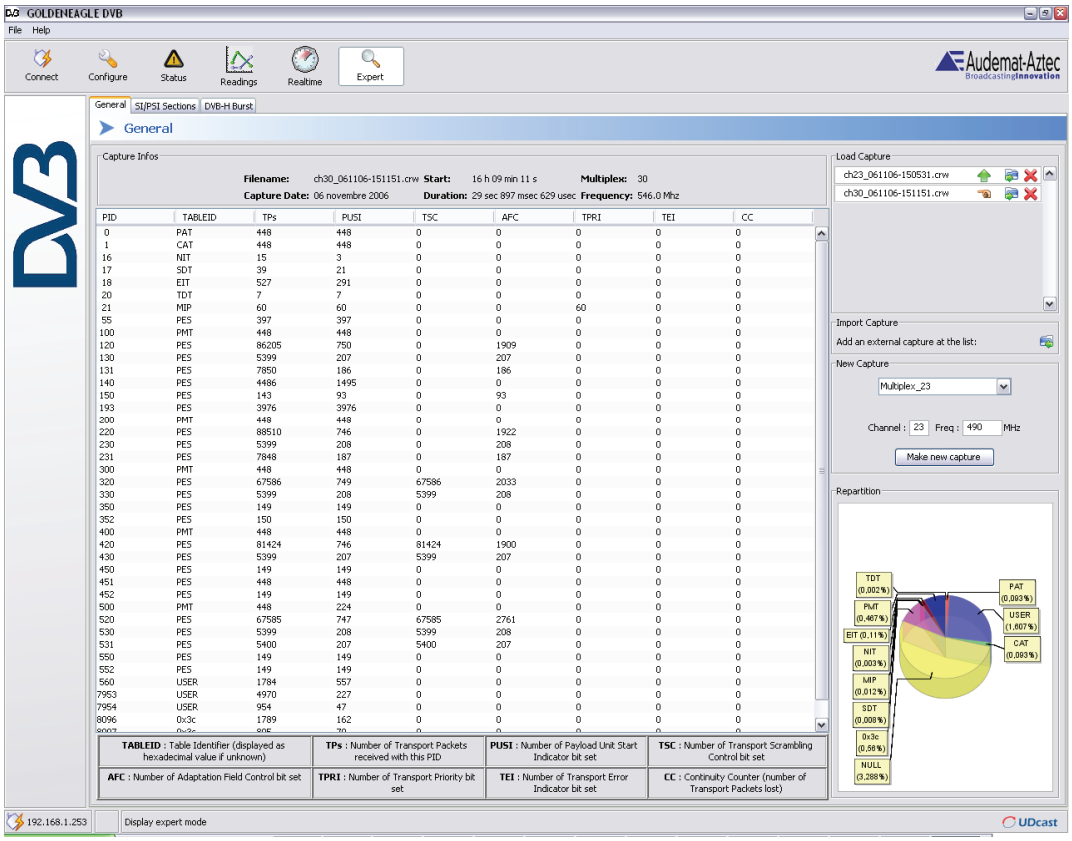
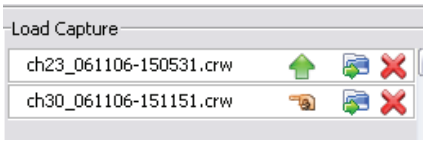
5.6. Tab “Expert”

See chapter 5.7.3 to activate this option.

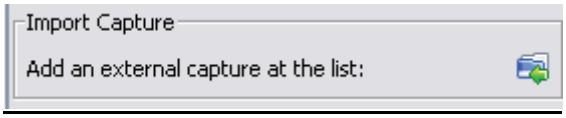
5.6.1. General Tab


GOLDENEAGLE DVB
File Help
Connect
Configure
Status
Readings
Realtime
Expert
Audemat-Aztec
General
SI/PSI Sections
DVB-H Burst
Capture Infos
Filename: ch30_061106-151151.crw Start: 16 h 09 min 11 s Multiplex: 30
Capture Date: 06 novembre 2006 Duration: 29 sec 897 msec 629 usec Frequency: 546.0 Mhz
PID TABLEID TPs PUSI TSC AFC TPRI TEI CC
Load Capture
ch23_061106-150531.crw
ch30_061106-151151.crw
Import Capture
Add an external capture at the list:
New Capture
Multiplex_23
Channel : 23 Freq : 490 MHz
Make new capture
Repartition
TABLEID : Table Identifier (displayed as hexadecimal value if unknown)
TPs : Number of Transport Packets received with this PID
PUSI : Number of Payload Unit Start Indicator bit set
TSC : Number of Transport Scrambling Control bit set
AFC : Number of Adaptation Field Control bit set
TPRI : Number of Transport Priority bit set
TEI : Number of Transport Error Indicator bit set
CC : Continuity Counter (number of Transport Packets lost)
192.168.1.253
Display expert mode
UDcast

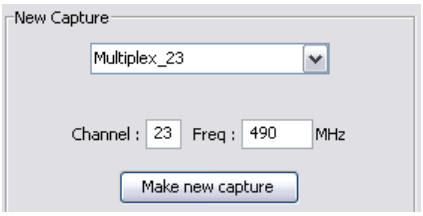


Click on to select a file
Click on to export from the equipment to a PC
Click on to delete it

It is possible to do up to 10 captures (which appear in “Load Capture”).
It is possible to delete them, select them and import them via menu "import capture":



Make new capture
A 30s capture window will be saved then transmitted.



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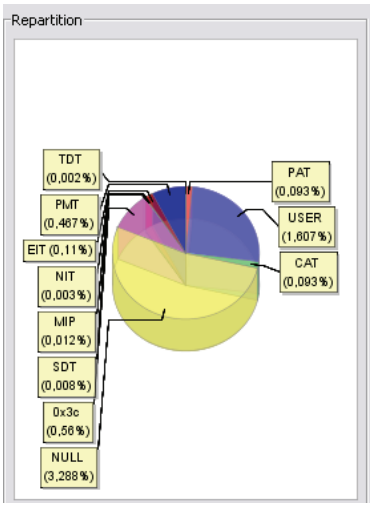
Capture Info
Name, date and duration of the currently loaded capture

Repartition
Aggregated bandwidth percentage usage per PID or PSI/SI table_id



PID Table

PID: displayed in decimal

TABLEID: Table Identifier (displayed as hexadecimal value if unknown)
- for PID in the range 0 [0x00] to 31 [0x1F], and 8191 [0x1FFF]
  this is the ISO/DVB PID to PSI/SI table_id mapping
- for others PID: last table_id seen on this PID
- MPE without FEC will appear as MPE
- MPE and MPE-FEC will be aggregated as MPE+FEC

TPs: Transport Packets. Number of Transport Packets received with this PID

PUSI: Payload Unit Start Indicator
number of Transport Packets with payload_unit_start_indicator bit set received with this PID

TSC: Transport Scrambling Control
number of Transport Packets with adaptation_field_control bit set received with this PID

AFC: Adaptation Field Control
number of Transport Packets with adaptation_field_control bit set received with this PID

TPRI: Transport Priority
number of Transport Packets with transport_priority set received with this PID

TEI: Transport Error Indicator
number of Transport Packets with ransport_error_indicator bit set received with this PID

CC: Continuity Counter
Number of Transport Packets lost based on the continuity_counter discontinuities observed on this PID (might be inaccurate if there is a discontinuity greater than 16)

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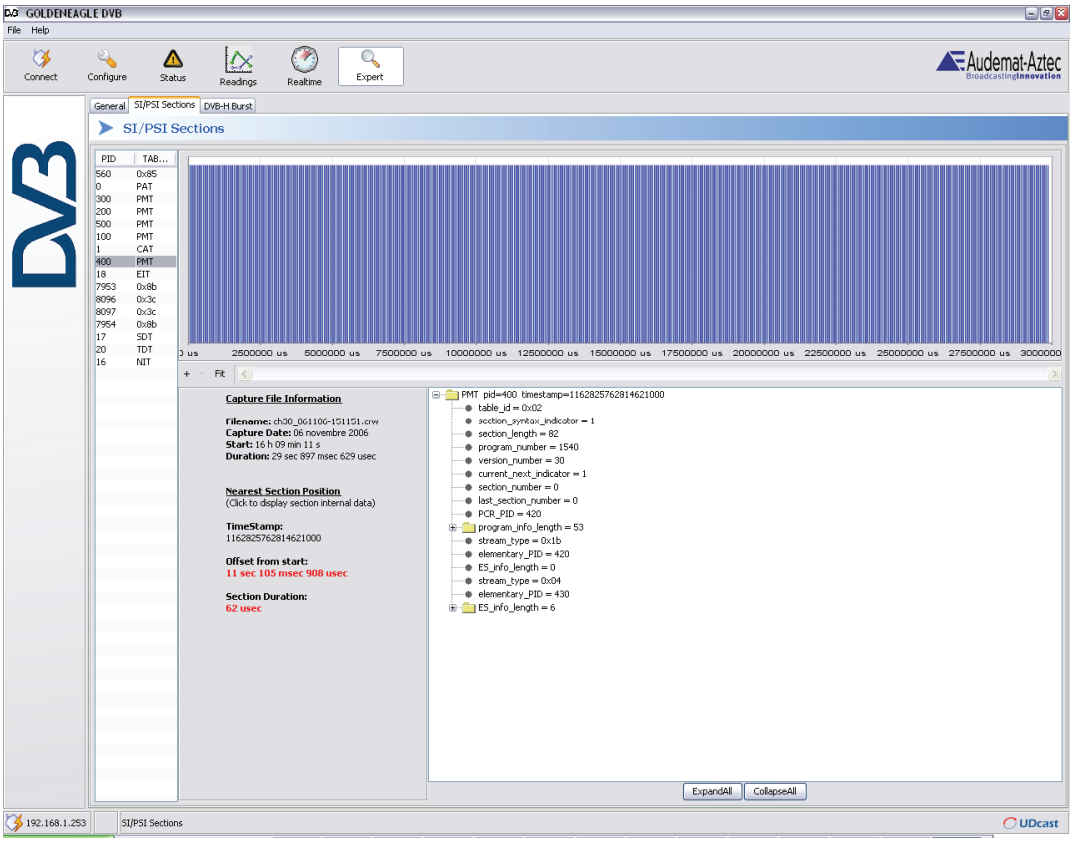
5.6.2. SI/PSI TAB



PID List

PID: displayed in decimal
PID of all PSI/SI sections (except MPE and MPE-FEC)

TABLEID: Table Identifier (displayed as hexadecimal value if unknown)
Scattered per PID (several different PID may appear for a single TABLEID)

If one PID line is selected all sections belonging to this PID will be displayed on the time line. Each section will be displayed as a vertical box. The box width is the section duration (first bit to last bit).

Time line sections display

Display all sections belonging to the selected PID
Time line unit is microseconds and start with 0 (start of capture)
+/-/Fit might be used to zoom, unzoom, and fit into window
Local zooming might be performed with the right mouse button
Click around a specific section to display section internal structure

Capture File Information

When moving the cursor in the time line section, TimeStamp, Offset from start and section duration are displayed for the nearest section (no need to click).

TimeStamp: Time Stamp of the current section start in nanoseconds since 1970/01/01

Offset from start: Time stamp of the current section in microseconds since the capture start

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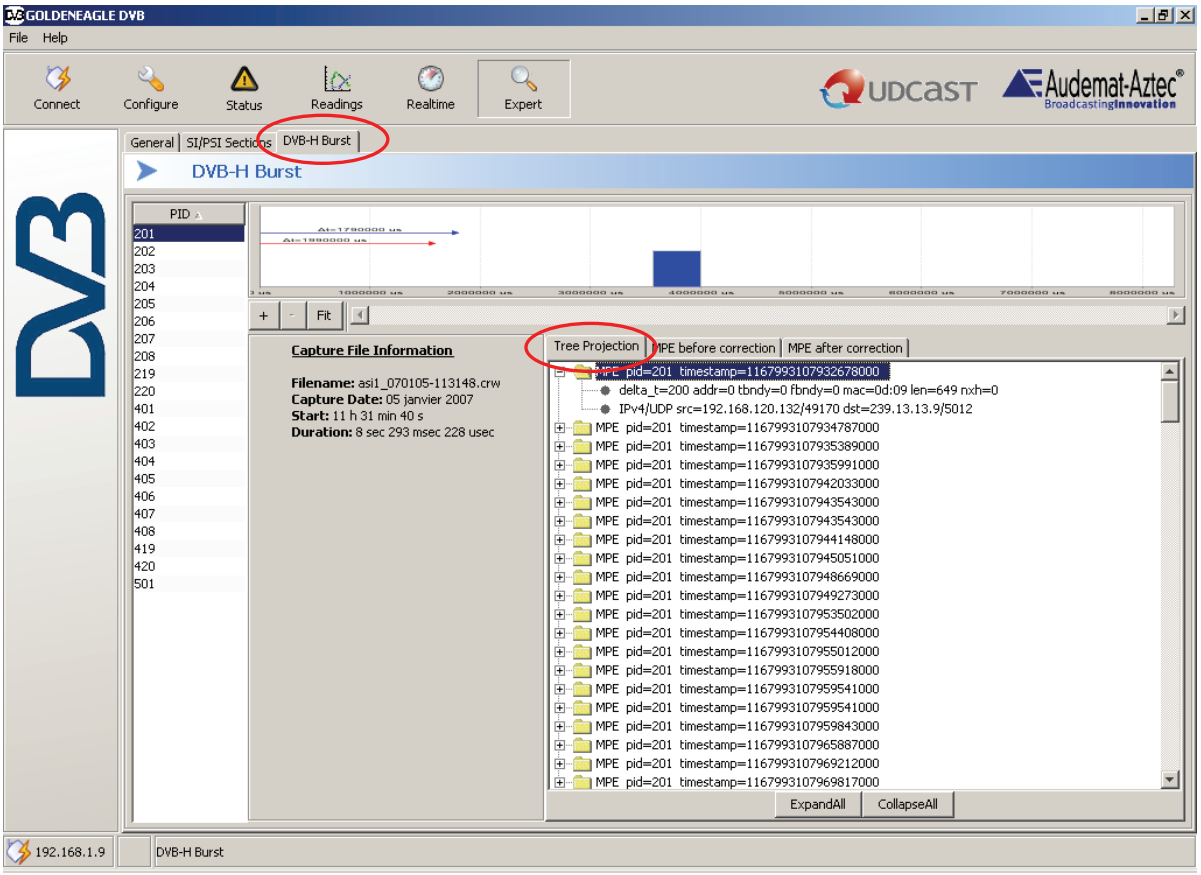
Section Duration: First bit to last bit section duration, in microseconds

Section internal structure

Display a hierarchical view of the various fields of the currently selected section.

5.6.3. DVB-H Burst tab

5.6.3.1 Tree protection



PID List

List of PIDs that carries DVB-H bursts

Time line sections display

Display of all MPE and MPE-FEC burst belonging to the selected PID
Time line unit is microseconds and start with 0 (start of capture)
Each burst shows with an arrow the delta_t (min and max) to next burst
The arrow start on the MPE or MPE-FEC section which signals the delta_t

- +/-/Fit might be used to zoom, unzoom, and fit into window
- local zooming might be performed with the right mouse button
- click around a specific burst to display section internal structure

Capture File Information

When moving the cursor in the time line sections display, the fields TimeStamp, Size, FEC, Burst Duration, Offset from start are displayed for the nearest section (no need to click)

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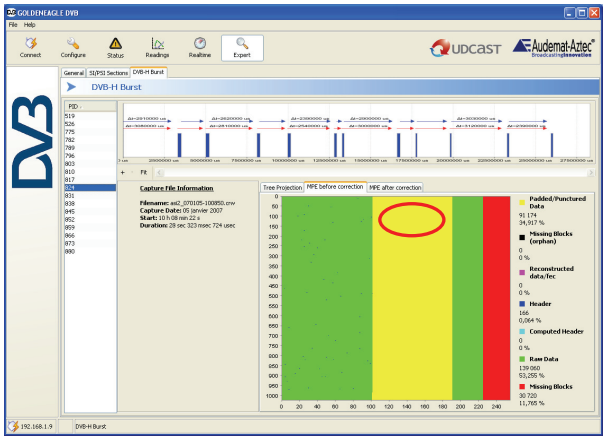
Size: total number of bits contained in the current burst; the bits are counted from MPE and MPE-FEC

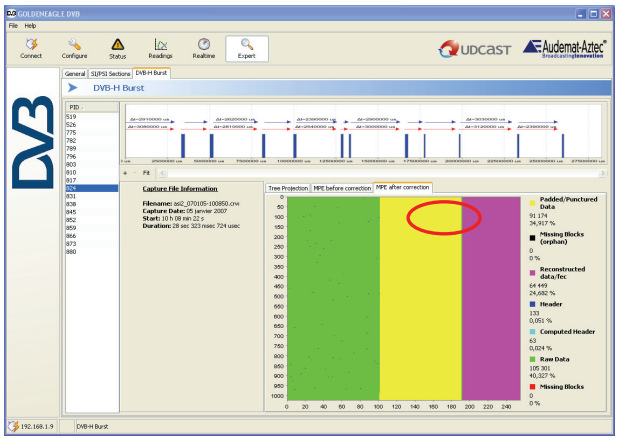
FEC: number of columns and rows of FEC in the current burst
TimeStamp: Time Stamp of the current burst start in nanoseconds since 1970/01/01
Burst Duration: first bit to last bit burst duration, in microseconds
Bandwidth: Burst bandwidth computed as (Burst Size / time distance to next burst)
Offset from start: Time stamp of the current section in microseconds since the capture start

Burst internal structure

Display a hierarchical view of the MPE and MPE-FEC sections belonging to the currently selected burst.

5.6.3.2 MPE before and after correction





The MPE-FEC sections are organised under the form of a matrix where the data are organized in column.
The FEC section contains data which enable corrections for each line.

These screens enable to display a graphic representation of the MPE present in the burst before and after correction.

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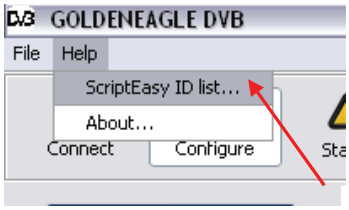
5.7. "Help" menu

5.7.1. ScriptEasy ID list…

To visualize channel numbers of the software Scripteasy, go to the menu "ScriptEasyID list…"

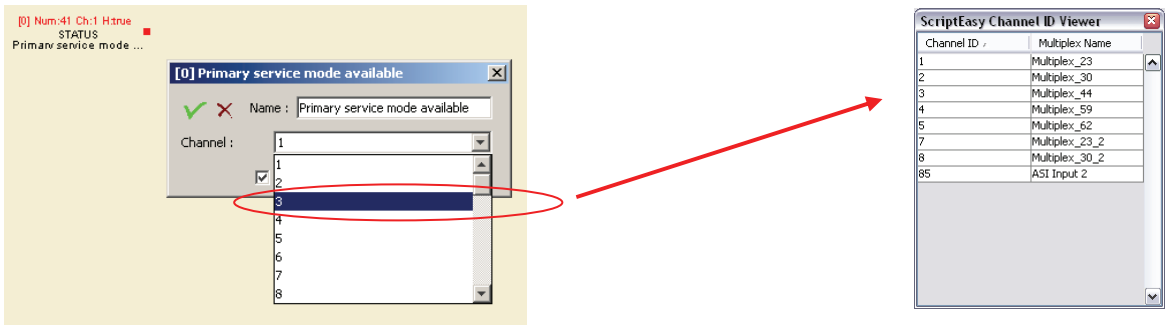


The user can visualize which multiplex corresponds to which channel.

Example:
In this example, the alarm defined in the Scripteasy software "primary service made available" corresponds to the 44 channel.

Software Scripteasy

GoldenDVB-T/H Application



=> See chapter 6.3.3 of the Scripteasy manual on www.audemat-aztec.com, GOLDENEAGLE DVB-T/H product, tabs "Download".

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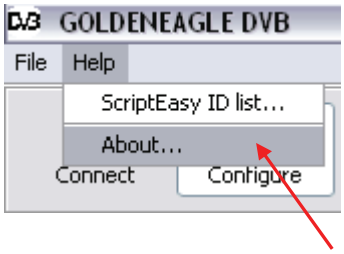
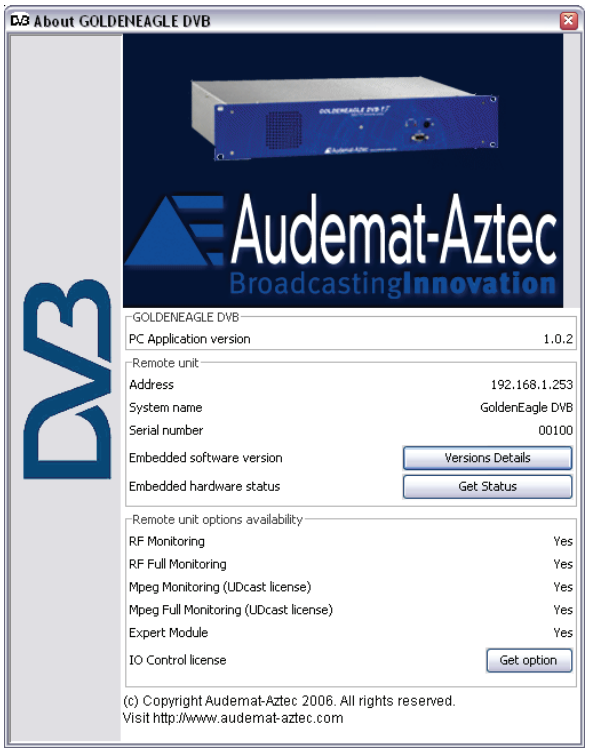
5.7.2. About

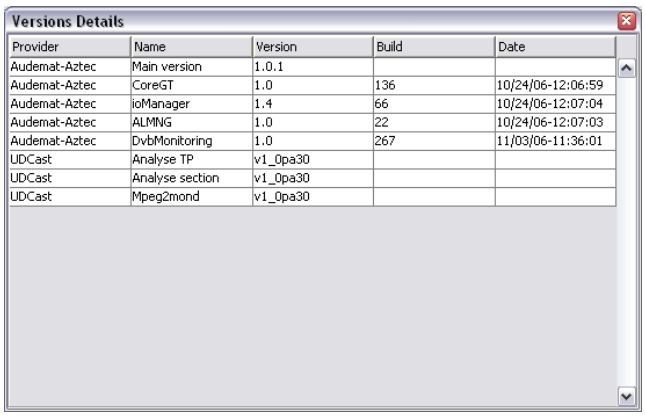
To see the equipment configuration, go to the "About" menu of the application.

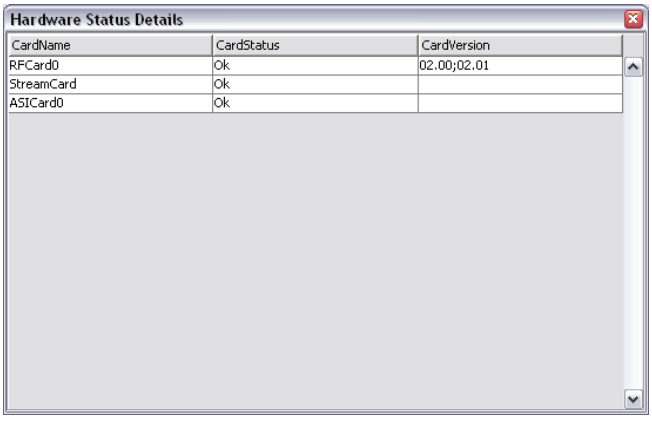




The user can visualize the version numbers for the equipment:

- software: by clicking on "Versions Details"
- hardware: by clicking on "Get Status"


Versions Details
Provider | Name | Version | Build | Date
Audemat-Aztec | Main version | 1.0.1 | |
Audemat-Aztec | CoreGT | 1.0 | 136 | 10/24/06-12:06:59
Audemat-Aztec | ioManager | 1.4 | 66 | 10/24/06-12:07:04
Audemat-Aztec | ALMNG | 1.0 | 22 | 10/24/06-12:07:03
Audemat-Aztec | DvbMonitoring | 1.0 | 267 | 11/03/06-11:36:01
UDCast | Analyse TP | v1_0pa30 | |
UDCast | Analyse section | v1_0pa30 | |
UDCast | Mpeg2mond | v1_0pa30 | |



Options can be updated with a key provided by the sales department. Contact them to obtain the information.

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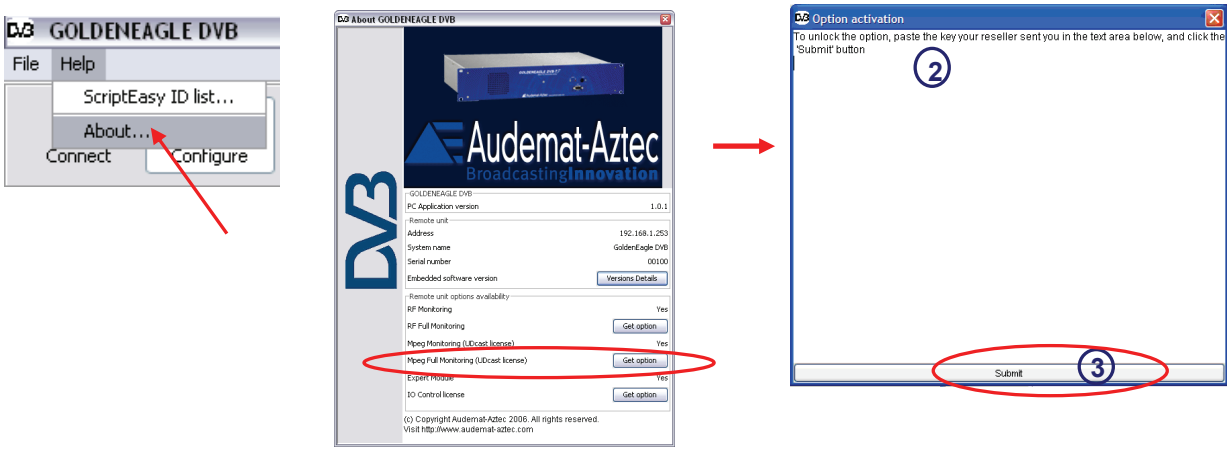
5.7.3. Installation of the "Full Mpeg Monitoring" option

↳ Copy the “product key" available on the provided CD-Rom:

↳ Go to the menu “Help" of the DVB GOLDENEAGLE application and click on “About”:



↳ Click on “Get option” on the line “Mpeg Full Monitoring”. (1)

↳ Paste or write the "product key". (2)

↳ Then click on “Submit" to upgrade the equipment with this option (3)

↳ Close the application and **reboot the equipment.**
The message “yes” appears on the line “Mpeg Full Monitoring” (instead of “Get option”).

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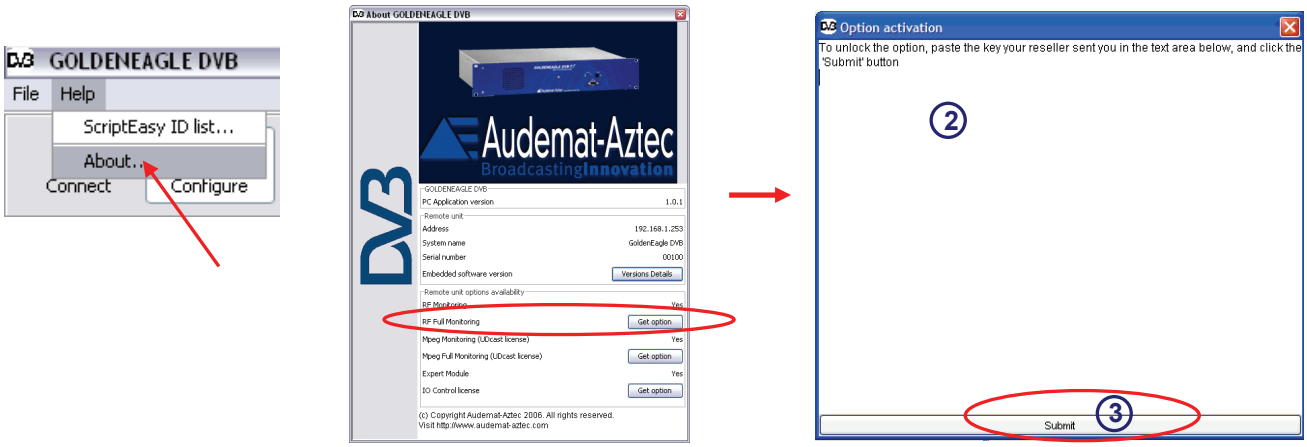
5.7.4. Installation of the "Full RF Monitoring" option

↳ Copy the “product key" available on the provided CD-Rom:

↳ Go to the menu “Help" of the DVB GOLDENEAGLE application and click on “About”:



↳ Click on “Get option” on the line “RF Full Monitoring”. (1)

↳ Paste or write the "product key". (2)

↳ Then click on “Submit" to upgrade the equipment with this option. (3)

↳ Close the application and **reboot the equipment.**
The message “yes” appears on the line “RF Full Monitoring” (instead of “Get option”).

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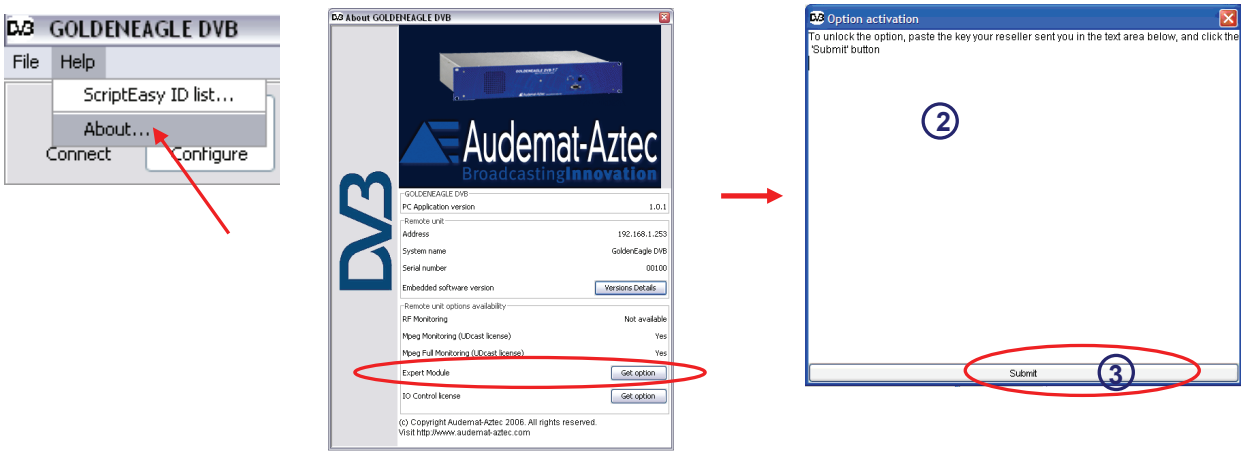
5.7.5. Installation of the "Module Expert"(DVB-H option)

↳ Copy the “product key" available on the provided CD-Rom:

↳ Go to the menu “Help" of the DVB GOLDENEAGLE application and click on “About”:



↳ Click on “Get option” on the line “Expert Module”. (1)

↳ Paste or write the "product key". (2)

↳ Then click on “Submit" to upgrade the equipment with this option. (3)

↳ Close the application and **reboot the equipment.**
The message “yes” appears on the line “Expert Module” (instead of “Get option”).

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5.7.6. Installation of the "I/O" option

5.7.6.1 Precautions before beginning

Before operating the equipment, check that all connectors are disconnected, **first and foremost the mains lead**.

When dismounting or remounting sub-sets and electronic components, it is very important to observe the following directions:

- Avoid any contact between circuit pins and any material likely to be electrostatic.
- Only touch circuit pins if they are connected to the ground by a conductor bracelet.
- Use a conductor mat connected to earth when manipulating sensitive components.
- Never remove or plug in sub-sets, printed circuits or components when the device is switched on.

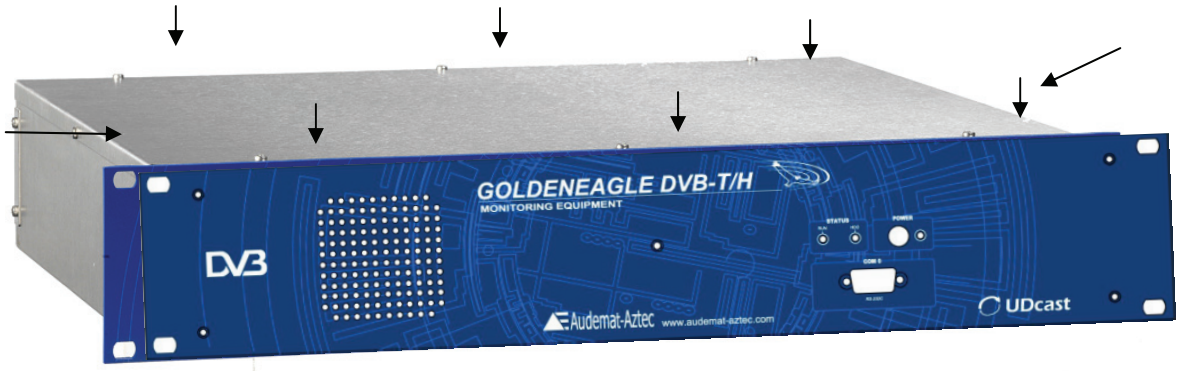
5.7.6.2 Procedure for I/O board assembly

A. Preparation

The equipment must be off.
It is strongly recommended to use protection from ESD (Bracelets, heelpieces…).
The user must have a Phillips screwdriver and # 5 box wrench.

B. Opening the equipment

Unscrew the 8 screws holding the lid (6 on top and 1 on each side) with the Phillips screwdriver.



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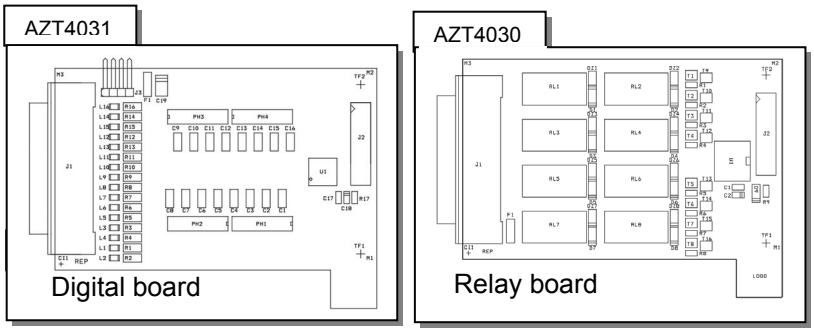
C. I/O BOARDS ASSEMBLY

C.1. Boards types



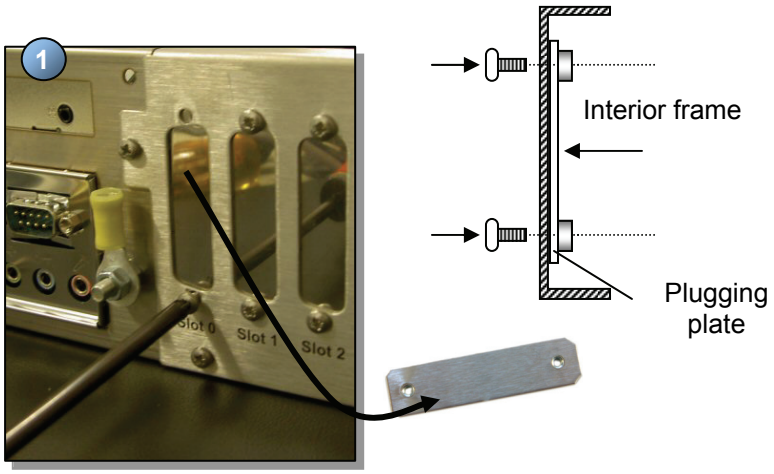
C.2 Fixing the boards

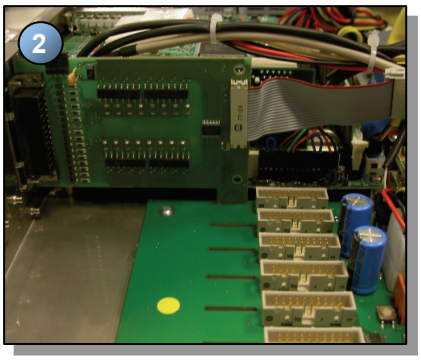
1. Remove plugging plates from places where the boards are going to be fixed.

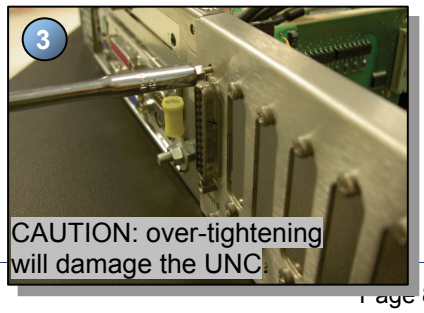
2. Insert each board. First, insert the board's 25 pin D-SUB into the frame cut out, then slide the board into the mother board's notch, intended for this use.

3. Maintain the board by fixing it to the chassis with the 25 pin D-SUB, using the 2 UNC type locking mechanisms (supplied with the board). CAUTION: over-tightening will damage the UNC.

4. Fold the board's ribbon cable at a right angle and connect its extremity to the 20 pin HE10 connector, located on the mother board.







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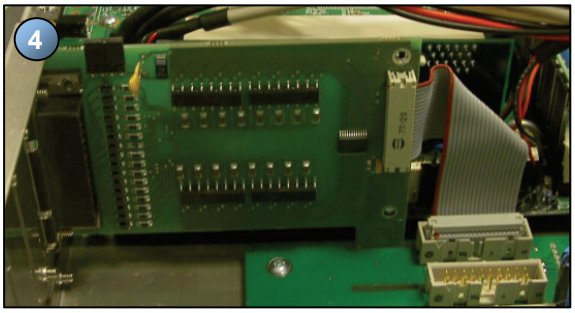
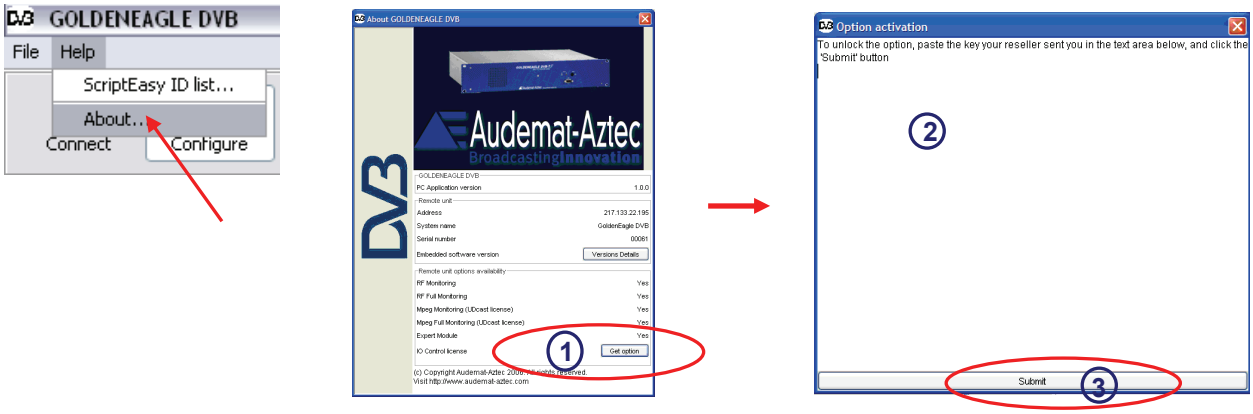


5.7.6.3 *Software procedure*

↳ Copy the “key-product” available on supplied Audemat-Aztec CD-Rom (click on “Key-product” on the main page).

↳ Go to GOLDENEAGLE DVB application’s “help" menu and click on “About”:



↳ Click on “Get option” on the line mentioning “I/O Control license” (1)

↳ Paste or copy the “key-product” again (2)

↳ Now click on “Submit" to update the equipment with this option (3)

↳ Close the application and reboot the equipment
The “yes” message will appear next to the “I/O Control license" option in the “About” menu.

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7. GLOSSARY

AC-3: Audio code using the AC-3 Dolby method

ADSL - Asymmetric Digital Subscriber Line

AGC - Automatic Gain Control

ASI - Asynchronous Serial Interface

ATSC - Advanced Television Standard Committee

ATSC - Australian Telecommunication Standardization Committee

BER - Bit Error Rate or Bit Error Ratio

BIT: 'binary digit' – smallest unit in the binary system.

BNC - Bayonet Neil-Concelman

C/N - Carrier to Noise ratio

CA - Conditional Access

CHAP - Challenge-Handshake Authentication Protocol

COFDM - Coded Orthogonal Frequency Division Multiplex

CRC - Cyclic Redundancy Check

DNS - Domain Name Server

DVB - Digital Video Broadcasting

DVB-T – Terrestrial DVB

EBU - European Broadcasting Union

EPG - Electronic Program Guide

ES - Elementary Stream

ETSI - European Telecommunications Standards Institute

FEC - Forward Error Correction

FTP – File Transfer Protocol

GPRS - General Packet Radio Service

GSM - Global System for Mobile communications

HDTV - High Definition Television

HTML - Hyper Text Mark-up Language

HTTP - Hyper Text Transfer Protocol

IP - Internet Protocol

IQ - In-phase and Quadrature Components

ISDN - Integrated Services Digital Network

JAVA: Java is a platform-independent high-level programming language from Sun Microsystems

JPEG - Joint Photographics Experts Group

LAN - Local Area Network.

MER - Modulation Error Ratio

MFN - Multi-Frequency Network

MPEG - Motion Pictures Experts Group

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OFDM - Orthogonal Frequency Division Multiplexing

PAP - Password Authentication Protocol

PER - Packet Error Ratio

PES - Packetized Elementary Stream (sometimes called Program Elementary Stream)

PID - Packet Identifier

POP3 - Post Office Protocol 3

PPP - Point-to-Point Protocol

PS - Program Stream

PSK - Phase Shift Keying

QAM - Quadrature Amplitude Modulation

QPSK - Quaternary Phase Shift Keying

RF - Radio Frequency

RS - Reed Solomon

SFN - Single Frequency Network

SMTP - Simple Mail Transfer Protocol

SNMP - System Networking Management Protocol

SNR - Signal to Noise Ratio

TCP - Transmission Control Protocol

TCP/IP - Transmission Control Protocol / Internet Protocol

TPS - Transport Packet Stream

TS - Transport Stream

TV – Television

UDP - User Datagram Protocol

UHF - Ultra High Frequency: de 300 MHz à 3 000 MHz

URL - Uniform Resource Locator

VHF - Very High Frequency: de 30 MHz à 300 MHz

VPN - Virtual Private Network

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APPENDIX A: MONITORING PARAMETERS

Parameters		Type	Range
Equipement configuration		int	1 RF / 2 ASI / 3 RF-ASI / 4 RF-ASI linked
Monitoring control	Multiplex type	int	RF / ASI
	Multiplex name	string	
	Channel monitoring control	int	Active monitoring / Measure without alarm / Standby
	Monitoring priority	int	Low / Normal / High
Paramètres RF			
Identification	Channel number	int	4 – 69
	Channel zone	int	
	Channel bandwith	int	auto / 5 / 6 / 7 / 8 MHz
	Transmitter name	string	
	Network name	string	
	RF Input	int	
Cell Id	Reference value	int	
	Cell Id monitoring	int	Y/N
	Send alarm	int	Y/N
DVB-T parameter	COFDM mode	int	4k
	Guard interval	int	1/4 / 1/8 / 1/16 / 1/32
	Constellation	int	QPSK / 16QAM / 64QAM
	Code rate	int	1/2 / 2/3 / 3/4 / 5/6 / 7/8
	Hierarchical mode	int	None / alpha1 / alpha2 / alpha4
	DVB-T parameter monitoring	int	Y/N
	Send Alarm	int	Y/N
DVB-T presence	AGC Monitoring	int	Y/N
	Carrier Monitoring	int	Y/N
	TPS Monitoring	int	Y/N
	Viterbi Monitoring	int	Y/N
	DVB-T presence processing time	int	00:00 – 59:59 (mm:ss)
	DVB-T presence time interval	int	00:00 – 59:59 (mm:ss)
	Number of events allowed in the interval	int	1 – 99
	Send alarm	int	Y/N
RF	RF signal nominal level	int	30 – 90 dBµV
	High RF relative threshold	int	0 – 20 dB
	Low 1 RF relative threshold	int	0 – 20 dB
	Low 2 RF relative threshold	int	0 – 20 dB
	RF relative hysteresis	int	0 – 10 dB
	RF processing time	int	00:00 – 59:59 (mm:ss)
	RF time interval	int	00:00 – 59:59 (mm:ss)
	Number of events allowed in the interval	int	1 - 99
	Send alarm on high threshold	int	Y/N
	Send alarm on low1 threshold	int	Y/N
	Send alarm on low2 threshold	int	Y/N
C/N	C/N low_1 absolute threshold	int	0 – 40 dB
	C/N low_2 absolute threshold	int	0– 40 dB
	C/N relative hysteresis	int	0 – 15 dB
	C/N processing time	int	00:00 – 59:59 (mm:ss)
	Send alarm on low1 threshold	int	Y/N
	Send alarm on low2 threshold	int	Y/N
MER	MER absolute threshold	int	20 – 30 dB
	MER relative hysteresis	int	0 – 5 dB
	MER processing time	int	00:00 – 59:59 (mm:ss)
	Send alarm on low threshold	int	Y/N
BER	Triggering BER	int	1 - 999 $*10^{-5}$
	Disappearance BER	int	1 - 999 $*10^{-5}$
	BER processing time	int	00:00 – 59:59 (mm:ss)
	Monitoring by average error rate	int	Y/N
	Send alarm on trigger	int	Y/N
PER	PER absolute threshold	int	0 – 100% (ratio packet error/total packet)
	PER time interval	int	00:00 – 59:59 (mm:ss)
	Number of events allowed in the interval	int	1 – 99
	Send alarm on high threshold	int	Y/N
Paramètres MPEG TS			
First priority	TS_sync_loss monitoring	int	Y/N

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	Sync_byte_error monitoring	int	Y/N
	PAT_error monitoring	int	Y/N
	Continuity_count_error monitoring	int	Y/N
	PMT_error monitoring	int	Y/N
	PID_error monitoring	int	Y/N
	First priority time interval	int	00:00 – 59:59 (mm:ss)
	Number of events allowed in the interval	int	1 - 99
	Send alarm on TS_sync_loss	int	Y/N
	Send alarm on Sync_byte_error	int	Y/N
	Send alarm on PAT_error	int	Y/N
	Send alarm on Continuity_count_error	int	Y/N
	Send alarm on PMT_error	int	Y/N
	Send alarm on PID_error	int	Y/N
Second priority	Transport_error monitoring	int	Y/N
	CRC_error monitoring	int	Y/N
	PCR_error monitoring	int	Y/N
	PCR_repetition_error monitoring	int	Y/N
	PCR_accuracy error monitoring	int	Y/N
	PTS_error monitoring	int	Y/N
	CAT_error monitoring	int	Y/N
	Second priority time interval	int	00:00 – 59:59 (mm:ss)
	Number of events allowed in the interval	int	1 - 99
	Send alarm on Transport_error	int	Y/N
	Send alarm on CRC_error	int	Y/N
	Send alarm on PCR_error	int	Y/N
	Send alarm on PCR_repetition_error	int	Y/N
	Send alarm on PCR_accuracy error	int	Y/N
	Send alarm on PTS_error	int	Y/N
	Send alarm on CAT_error	int	Y/N
Third priority	NIT_error monitoring	int	Y/N
	NIT_actual_error monitoring	int	Y/N
	NIT_other_error monitoring	int	Y/N
	SI_repetition error monitoring	int	Y/N
	Unreferenced_PID monitoring	int	Y/N
	Unreferenced_PID1 ignore	int	
	Unreferenced_PID2 ignore	int	
	Unreferenced_PID3 ignore	int	
	Unreferenced_PID4 ignore	int	
	Unreferenced_PID5 ignore	int	
	SDT_error monitoring	int	Y/N
	SDT_actual_error monitoring	int	Y/N
	SDT_other_error monitoring	int	Y/N
	EIT_error monitoring	int	Y/N
	EIT_actual_error monitoring	int	Y/N
	EIT_other_error monitoring	int	Y/N
	EIT_PF_error monitoring	int	Y/N
	RST_error monitoring	int	Y/N
	TDT_error monitoring	int	Y/N
	Third priority time interval	int	00:00 – 59:59 (mm:ss)
	Number of events allowed in the interval	int	1 – 99
	Send alarm on NIT_error	int	Y/N
	Send alarm on NIT_actual_error	int	Y/N
	Send alarm on NIT_other_error	int	Y/N
	Send alarm on SI_repetition error	int	Y/N
	Send alarm on Unreferenced_PID	int	Y/N
	Send alarm on SDT_error	int	Y/N
	Send alarm on SDT_actual_error	int	Y/N
	Send alarm on SDT_other_error	int	Y/N
	Send alarm on EIT_error	int	Y/N
	Send alarm on EIT_actual_error	int	Y/N
	Send alarm on EIT_other_error	int	Y/N
	Send alarm on EIT_PF_error	int	Y/N
	Send alarm on RST_error	int	Y/N
	Send alarm on TDT_error	int	Y/N
Transmission time	Transmission starting time	int	00:00:00 – 23:59:59 (hh:mm:ss)
	Transmission ending time	int	00:00:00 – 23:59:59 (hh:mm:ss)
Recording	Recording on alarm	int	Y/N
	Cyclic recording	int	Y/N

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APPENDIX B: FUNCTIONS ASSOCIATED WITH THE GOLDENEAGLE DVB-T/H'S VERSIONS

	RF Input Version	ASI input version	RF & ASI input version
Standard Input	RF	ASI	RF and ASI
Standard Output	ASI	ASI	ASI
Optional Input(s)	2nd RF input	2nd ASI input	2nd RF input 2nd ASI input 2nd RF/ASI input
ASI switch option	-	✔	✔
RF input monitoring	Sequential (40 freq.) and/or continuous with 2nd RF	-	Sequential (40 freq.) and/or continuous with 2nd RF
ASI input monitoring	-	Continuous on one or several ASI streams	Continuous on one or several ASI streams
RF & ASI inputs combined	-	-	Sequential (40 freq.)
Software module * (standard delivery)	Full RF module	Full MPEG-T module	Basic RF module Basic MPEG-T module
Optional software modules	-	MPEG-H module	Full RF module Full MPEG-T module MPEG-H module
I/O functionality	3 slots for I/O boards	3 slots for I/O boards	3 slots for I/O boards

** see appendix C*

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APPENDIX C: FUNCTIONS CHART & HOW TO FIND A FUNCTION

			Available through:		
			GE DVB software	Site web	ScriptEasy
RF Functions	**Module RF basique**	**Module RF complet**			
RF level	x	x	x		
BER	x	x	x		
MER	x	x	x		
PER	x	x	x		
Carrier/Noise	x	x	x		
Transmission parameters	x	x	x		
DVB-T presence (AGC, TPS…)		x	x		
TS sync lost + sync byte error	x	x	x		
Constellation		x	x		
Impulse response (SFN)		x	x		

			Available through:		
			GE DVB software	Site web	ScriptEasy
MPEG Functions	**MPEG-T basic module**	**MPEG-T FULL**			
TS Sync Loss	x	x	x		
Sync byte error	x	x	x		
PAT error	x	x	x		
PMT error	x	x	x		
Continuity Count Error		x	x		
PID Error		x	x		
Transport error	x	x	x		
CRC error	x	x	x		
PCR repetition error	x	x	x		
PCR discontinuity error	x	x	x		
PCR accuracy error		x	x		
PTS error		x	x		
CAT error	x	x	x		
NIT Actual error	x	x	x		
NIT Other error	x	x	x		
SI repetition error		x	x		
Unreferenced PID error		x	x		
SDT actual error		x	x		
SDT other error		x	x		
EIT actual error		x	x		
EIT other error		x	x		
EIT PF error		x	x		
RST error		x	x		
TDT error		x	x		
Service availability		x	x		
Service degradation		x	x		
Service Impairments		x	x		
PID and PMT bit rate		x	x		
PCR Jitter		x	x		
MPEG Services		x	x		

		Available through:		
		GE DVB software	Site web	ScriptEasy
DVB-H functions	**DVB-H Expert module (Option)**			
PID Table	PID, table ID, TP, PUSI, TSC, AFC, TPRI, TEI, CC	x		
SI/PSI Table	Timestamp, offset, durée, structure interne	x		
DVB-H Burst	Liste PID , Time line, MPE-FEC	x		
DVB-H error	Burst_too_late…	x		
FER/MFER		x		
MPE	Before/after correction	x		

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	Available through:		
	GE DVB software	Site web	ScriptEasy
Configuration			
Product ID (name, description, serial number, software & hardware versions)		x	
Network configuration (IP Address, Mask & Gateway...)		x	
Configuration date & time (time zone or NTP)		x	
Configuration User accounts		x	
Configuration connection PPP		x	
Configuration e-mail (to receive alarms) and sending (text format)		x	
Configuration of table frequency/channel		x	
Configuration of the linked or no linked mode for RF+ASI version		x	
Download application		x	
Update/reboot/restart/shutdown		x	
Autres fonctions			
Events visualization	x	x	
Monitoring I/O (option)			x
Traps SNMP		x	x
Streaming	x		
Scanning monitoring	***NEW***		
Video/audio recording	x		

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